# The Iron A

### A Review of the Hardware and Metal Trades.

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#### Penfield's Improved Vise.

or other articles of daily use, but consists en- church door. Except as tradition or archæo- atively limited, while her Southern market has If a rod of less fusible metal touch the alloy shop furniture, the vise. From the rigid, work in silver, enriched by gilding and enamelinflexible permanent screw clamp of a few ing; repousse work in iron, decorated by in-

readers informed of the various steps by which surpass the Chinese or the modern Japanese nature, but the intelligent use of one requires stacle or obstruction, alone rendered possible established in every city and town, and are this progress has been secured, and we now examples of the art, and even approach very a large general and special knowledge. Any-such an unequal demand for labor and capital crowded, we learn, from early morning until show them, in the accompaning illustrations, nearly to the old Japanese. After an interesting the latest improvement, in which are combined description of the process of enameling at Birbut it is not everybody who knows what some points of special advantage over other mingham, the Times goes on to say that among he sees it. We do not have been attracted, and a larger area in the skulls and disfigured features are so numerous vises competing for popular favor. This vise was the noticeable specimens of the Messrs, wish to discourage the unscientific use of mi- South would have been placed under cultivaole manufacturer.

high and four or five inches in diameter, covtrade in roller skates, says:

The vise has two sets of jaws, one of which ered with floral decorations of great beauty.

high and four or five inches in diameter, covtrade in roller skates, says:

Manufacturers who are ca

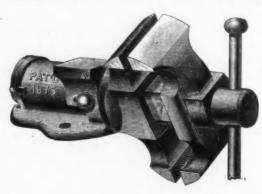
tirely of work of a highly decorative kind in logical lore had it, the affair had been forgotten been greatly curtailed; and, at all events, the under such circumstances it cuts it like a sol. During the past few years much time, labor and ingenuity have been devoted to the implaques and tazza. The whole may be arranged dent, had long ago utterly removed the oftenprovement of that most useful article of work- under the three principal classes of repousse sive thing. Still, however, the church door profitable employment for surplus capital and a crystallization, of the molecular particles.

This comparative condition of the two secyears ago, the tool has been gradually improved laid and damascened patterns in gold and sil- tracted one, and underneath its flat head was tions tends directly, of course, to a transfer of until it has become a machine, accommodating ver; and champleves and cloissonnes enamels. this atomic remnant of that ancient Scandina- both capital and labor from the North to the itself to all positions and conditions, In all of these departments considerable pro- vian malefactor's pelt—that fair skinned robber South, and it illustrates the economic law of between the two sections. Had there been no obstructing causes, capital and labor would ported is very large, and broken limbs, cracked

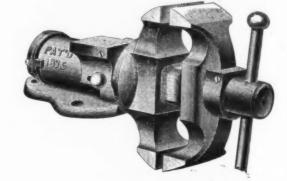
#### Roller Skates in England.

During the past year or two there has developed and suited to the performance of a variety of functions not expected of vises of the old pattern. We have kept our than in the cloissonnee enamels, which far late at night. The number of accidents reas to create alarm. In spite of the dangers, patented in January, 1875, by Mr. Elmon Penfield, of Middletown, Conn., who is also the

Manufacturers who are capable of producing







PENFIELD'S IMPROVED BENCH VISE

is smooth and the other rough, thus suiting it | One of the finest specimens of the repousse | which will fairly offset Prof. Lockwood's story, | to various kinds of work. The jaws are adjustable, as shown in the illustration, and are

work in iron of this firm is an oval mirror frame
justable, as shown in the illustration, and are

damascened with birds and arabesques. The capable of being set at any angle without a arabesques are simply burnished, but the birds moment's delay. This adapts it for use on all kinds of work which it is desirable to hold at an angle. The moveable, or front jaw, has a an angle. The moveable, or front jaw, has a bollow shank cast upon it, which passes through the back jaw and enters the shell or stationary part of the vise. The hollow shank repousse, inlaid with gold and silver, relieved by contains a nut which bears against the end of exquisitely chased panels of oxidized silver, color in some earth which he had spread upon also, that in comparing the present condition their bantlings, and confident of their salabilthe shell equally all round; this keeps the screw in line. A devise, not shown in the illustration, holds the jaws in position, and, while it does not prevent their turning, allows them to follow the screw. The vise is easily taken apart for oiling. Pains has been taken in the construction to arrange the parts so that dirt is ex-

### The Meyer Gauge Cock.

This gauge cock belongs to the self-closing variety. The discharge of steam and water is directly downward, clear of the engine. The handles are provided with holes, into which a rod may be put when the cocks are out of reach. Its operation is as follows: By slightly ter pieces, plateaux, candelabra and fruit stands, are richly decorated with from the stem B, the lead seat A being removed from face of stem B, steam or water eacapes through the outlet N directly downward. As soon as the hand is removed from the handle H, its weight causes it to drop, closing the seat the South Kensington Museum, and A tight against outlet of stem B. The seat A not the least excellent part of the is a lead or composition washer that can any collection will be the show cases of sily replaced

The handle, nozzle and case holding the valve seat, are all in one piece and turn together; hence, when the handle is raised the action of the spiral groove and thread B, takes the seat A away from the nozzle or stem of the valve, which is screwed into the boiler. The valve seat being of lead makes it very easy of renewal, and at the same time prevents the necessity of grinding joints. In case of leakage it is only necessary to remove the old lead washer and drop a new one in its place, a matter taking but very little time. The nozzle N and handle H being in one piece, with the body C C, the former is turned away from the hand as the handle is raised. The valve, it will be seen, is very simple in construction. The weight of the handle is sufficient to keep the cock closed. H. C. Meyer & Co., 46 and 48 Cliff street, New York, are the manufacturers.

#### Some English Metal Work for the Centennial.

The London Times, of the 11th instant, conelectro-plating, such as spoons, forks, dishes, was killed first), and the skin was nailed to the the foreign markets of the North are compar- tools while in the bath must also be avoided. as interesting.

engaged two years upon it. The decorative dinner and dessert services are of various styles, Egyptian, Grecian, Pom-

are made either in massive silver or in copper electro-plated, in either case relieved by gilding; and two complete services, consisting of cen-ter pieces, plateaux, candelabra and champlevee enameling and paneled with gold.

There is also a selection of repro ductions of the art metal works in ebon ized wood richly adorned with

incised and gilt decorations. The designs of the greater part of the work were prepared by M. Willms, chief artist for the Messrs. Elking-

### The Revelations of the Microscope.

The incalculable value of the microscope, as an aid to scientific investigation, has often been commented on and repeatedly illustrated, but it is doubtful if many people are aware of the perfection to which the science of microscopy has been brought. An illustration of this is furnished by Professor Lockwood, in labor and capital is greatest. an article in Harper's Magazine for April, as follows:

stance submitted to him to decide what it was. of both to flow Southward until the equilibrium To an unaided eye it might be a morsel of skin is re-established. It is an admitted fact that which a baggage smasher had knocked off the the demand for labor and capital at the South corner of a smoothly worn hair trunk. The is greater than it is at the North, and the reaartistic metal work which has been prepared by human being, and that, judging from the fine not probably exceed the increase of general gate, about £100,000, and will be put in a place strange facts now made known to the man is king. of honor in the center of the English depart of science were these: That, a thousand years

A gentleman residing in the West, who has Helicon vase and of the Milton shield, who was of the oxide of iron powder which had been used in cleaning the glass.

To the scientific student of nature the microscope is a revelation; to the unscientific peilan, Romano-Greek and Renalssance. They amateur it is merely a magnifying glass.



THE MEYER GAUGE COCK.

### Industrial Prospects of the South.

Gen. T. M. Logan, in an interesting commuequal"-labor and capital will seek employ-

The manufacturing interests of the South,

Under these circumstances, it is not surpris- | roller skates are, they tell us, "pulled out of

A California Lamp for the Centennial .- The San Francisco Chronicle says: It

California is somewhat elaborate, and more of a monument than a lamp

top, branches are sawed square off, and on the face appears the cost of arms of the State cut in nication to Harper's Magazine for March, says: which supports the figure of a miner, holding Whenever location, social and political rights in his hand a cluster of star lamps, the and privileges, confidence in the stability of branches and pendants being decorated with government, and natural advantages are the fruits for which the State is famed. The same-whenever, in short, "other things are pedestal is intended to be a symbolic representation of California-as the Golden State-the ment in those sections of the country in which great fruit State, etc. On this pedestal will be the demand for them is greatest. They will go the seal of the State in high relief, and medalwherever wages and profits are highest, and lion portrait likenesses of distinguished citizens figure is thirteen feet, and with the cluster of The South being to-day in a condition in which, lamps seventeen feet. The whole is to be made and volunteer entertainments.

bals." -- A patent has recently been granted to to the Centennial Exhibition. It consists of tion of the body; and, further, that it once be- demand for both labor and capital for many a regulated and well-determined temperature,

in the banks, it commands in the South the and South Staffordshire reports are uniform; highest rates of interest, and that while at the inventors, noble and plebeian, are seeking to and supported on crystal pillars, delicately en- a glass slide. Satisfied that he had found the of the two sections, as affected respectively by ity, the inventors are ready to sign contracts and supported on crystar plinars, deficately en- a grass side. Satisfied that the find conductive graved with incised and gilt ornamentation.

The tazza is in reposse eliver, with a border of iron, damascened and incrusted with gold, and the considered the evidence of his senses until the principal subject is a Pompetian lady at the description of the two sections, as affected respectively by the existing depression of business, the advantage is decidedly with the South. She is poor only engage to produce them with promptitude. Here is the experience of one manufacturer. The principal subject is a Pompetian lady at the definition of the two sections, as affected respectively by the existing depression of business, the advantage is decidedly with the South. She is poor only engage to produce them with promptitude. Here is the experience of one manufacturer. The principal subject is a Pompetian lady at the deviation of the two sections, as affected respectively by the existing depression of business, the advantage is decidedly with the South. She is poor only engage to produce them with promptitude. Here is the experience of one manufacturer. The tage is decidedly with the South. She is poor only engage to produce them with promptitude. Here is the experience of one manufacturer. The tage is decidedly with the South. She is poor only engage to produce them with promptitude. Here is the experience of one manufacturer. toilet, attended by her slaves. The design was all his new glass slides the same red germs were executed by M. Morel-Ladeuil, the artist of the to be found, which were nothing but particles less, proportionately, than it has been in the pieces of metal in its construction, and he is bound to time in its execution, when another inventor arrives, and offers to take 15,000 pairs of his particular pattern if the manufacturer is proposed to have California represented at left before a third arrives, and, through a merthe Centennial, under the auspices of chant, offers to place a much larger order, if the "Centennial Light Association," the manufacturer will undertake to work out by a memorial lamp post to be creet- his invention without delay. But the inventor ed in Fairmount Park at a cost of is not only engaged upon the 4000 pairs; about \$5000. Each State will be rep-be has received a visit from a distinguished inventor and his agent, and has already run out the patterns in lead for skates to be made wholly of steel, and certain of them in a style The pedestal represents the of unprecedented excellence and beauty. But trunk of one of the "big trees," the manufacturer is what the Americans term with gold quartz piled about the base. a "live" man. He is prepared to make hay A grapevine starting at the ground whilst the sun is shining, and is ready to run twines itself about the trunk, with his manufactory briskly in the roller skate line, to the exclusion for the time of less paying or ders. He has, therefore, made a selection from the offers presented to him, of which those we the wood. Above is an irregular shaped plinth, have sketched are merely a specimen-and hopes to net a fair purse by the enterprise.

A Queer Locomotive.-In Philadelphia they have a new locomotive which seems to be first cousin to the Keeley Motor. An exchange says: "It was built under the direction of Mr. Weston, of Manchester, England, for the Peunsylvania Railroad. It is claimed to possess these will be highest wherever competition for of California. The hight of the pedestal with greater power and to run at less expense than any other engine, as it utilizes both smoke and steam, and that it will draw a heavily loaded as compared with the North, labor and capital of enduring bronze, and the money is to be train of 100 cars, and can be stopped within its "An eminent microscopist had a bit of sub- are in active demand, there will be a tendency paid for it raised by individual subscription own length. The cab is on the top of the boiler, and the smoke stack is the size of a common stove pipe." Such items as this are very " Sounding Brass and Tinkling Cym- funny. What it does with the smoke in the way of utilizing it we should very much like to sayant appealed to his microscope. Entirely sons are appearent. The staple products of the Professor Silliuman, of New Haven, for a pro- know. If it is stopped within its own length ignorant of this tiny bit of matter, except as he South command the market of the world; and cess of imparting resonance to Britannia, when drawing a train of 100 cars at, say, 25 had taken counsel with his instrument, the the increase of crops, even in the event of an pewter, white metal and other alloys, which miles per hour, we think it would be a pretty tains a description of a handsome collection of wise man declared that it was the skin of a inflow of labor and capital to the South, will ordinarily give, when struck, only a dull leaden badly wrecked machine, and certainly the cars sound. The process consists in submitting would need the assistance of a wrecking train Messrs. Elkington & Co. as their contribution hair on it, it was from the so-called naked por- consumption. Hence there will be an active articles formed of these alloys to the action of to proceed. Putting the cab on top of the boiler is nothing new. We cannot discover the several hundred articles, worth, in the aggre- longed to a fair complexioned person. The years; and to this extent, after all, cotton just short of their melting point, for a brief relation between the size of the smoke stack but measured time. This is done in a bath of and the other points of the description. We oil or paraffine, care being taken to avoid con- dare say that the inventor, if a practical ment, where it will occupy a quarter of the before, a Danish marander had robbed an Eng- for the reasons aiready suggested, will also tact of water or even of a damp surface, which im chanic, would give a very different account space beneath the tower. The collection does lish church. In the spirit of the old-fashioned create for many years an active demand for might cause a steam explosion, acattering the from that contributed by the newspaper renot include any of the more common kinds of picty the robber was flayed (let us hope that he both capital and labor. On the other hand, bath. All contact of the articles with metallic porter, but then it would not probably be half Mictals.

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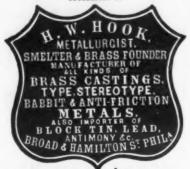
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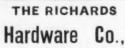
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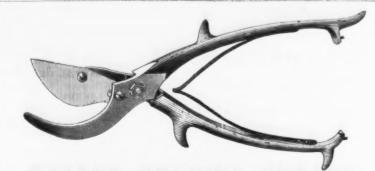
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The well point, which we show in the excellent cut herewith presented, is the invention of Mr. James Dollard, of Islip, Long Island. The apparatus consists in a point provided with a perforated leakes or strains and the excellent and the first sample showed an ultimate strength equal to good wrought iron, while it is greatly superior to the best gun metal, for which 16 tows. perforated jacket, or strainer, by means of for which 16 tons per square inch, with an

into the tube, for testing purposes, without disconnecting the point. An important feature of the invention consists in the double perforated tube, extending above and below the point of coupling, by means of which the strainer is protected from corrosion when exposed to Referring to our illus

tration, it will be seen that the point is connected to the tube by a screw thread coupling, in which the line of the thread is formed versely to that of the screw joints, or couplings, of the upper sections of the tube. The object of this is to pre vent disconnecting the them from the point The lower section of the tube, which is con-

nected with the point, is provided with any de sired number of perforations, and with a finely perforated strainer jacket surrounding it, for the admission of water for testing purposes. double perforated tube or strainer, consisting of an inner wire gauze, and an outer tube of greater thickness, and having somewhat coarser perforations, is enclosed within the tube so as to extend above and below the screw connections of the several parts.

The operation of the tool is as follows: The point is driven into the ground in any conrenient manner, and when water is reached it will flow into the tube through the perforations, and may be raised to the surface by pumping, or the depth ascertained without disconnecting the point. If a rod is introduced into the tube, and lowered until its forked end engages with a pin, or stop, located within the point, the upper sections are turned round until the point is uncoupled. The tube may then be raised enough to expose a sufficient length of the strainer for the inflow of water. The advantages cialmed for this well point are based upon the construction above described. There is no danger of turning the screw in driving, and when the tube is drawn there mains no iron inside or outside to rust. The inventor, who has had extensive experience with drive wells, assures us it will drive easier, last onger and give purer water than any other well point in the market.

### Manganese Bronze.

Mr. P. M. Parsons, well known in connection with the conversion of cast iron guns into rifled ordnance, as well as for the peculiar metal which, under the name of "white brass," is very largely employed for bearings and other purposes, has recently produced an alloy which promises to play an important part as a constructive material.

This alloy, called manganese bronze, formed by incorporating manganese with the various bronze mixtures, with the object of removing any oxide existing in the metal, by means of the strong affinity of manganese for oxygen. The action of the manganese in the alloy is strikingly visible in the texture of the metal, a fracture of which, so far from present- several communications at home and abroad, is ing the coarse granular appearance character- attracting a good deal of interest in England. istic of ordinary bronze, is as closely and finely The session of the Physical Society of January grained as the best qualities of steel, while the strength and tenacity of the alloy is greatly insion, without the enunciation of any settled decreased, as has been shown by a series of tests cision as to its nature. The only manife-tation lately carried out at the Royal Gun Factory, of the force yet obtained has been the appear-Woolwich.

this metal possesses is the facility with which induced current. The peculiarity of the pheit may be forged at a red heat, these operations greatly increasing its strength and tough-

The qualities of the metal were tested by six specimens, three of which were cast and the other three forged, the series representing three different degrees of bardness. These samples were proved to ascertain the tensile strength, elastic limits and ultimate elongation, and the following results were obtained:

1. A cast specimen of tough quality, adapted especially for constructive purposes, showed an ultimate strength of 243 tons per square inch, with an elastic limit of 14 tons, and an elongation of 8.75 per cent.

2. The same quality forged had an ultimate resistance of 29 tons per square inch, an elastic limit of 12 tons, and an elongation of 31.8 per cent.

3. This was a cast sample of harder quality. It broke under a load of 22.1 tons per square him lately, but he has turned up in a new role. inch, had an elastic limit of 14 tons, and an He has got beyond pig fron, and at last has diselongation of 5.5 per cent.

when forged, rose to 28.8 tons per inch, the iron ore is reported to have been recently diselastic limit was reached at 13.2 tons, and the elongation was 35.3 per cent.

5. This sample was still harder. The cast test piece broke at 23.6 tons, with an elastic has been analyzed in Philadelphia and prolimit of 16.8 tons, and an elongation of 3.8 per nounced good." The joy that filled the soul

strength of 30.3 tons per inch, the elastic limit motor.

being reached at 12 tons, and the elongation peing 20.75 per cent,

From these truly remarkable results it will be which the water is afforded a chance to flow clastic limit of seven tons, are extremely high strengths. The effect of forging this metal is also very striking, raising, as it does, the strength to such high limits, and practically giving a new and most valuable metal to the world.

In some respects, indeed, it resembles aluminum bronze, but its resistance greatly exceeds that of this alloy, which does not exceed 22.6 per square inch, while its elongation and elasticity are considerably inferior to that of the manganese bronze.

Manganese bronze, by virtue of greater strength and more reliable character, will find an application wherever gun metal is employed, while the facility with which it can be forged, and the benefit it derives from this operation, will render it still more useful as a onstructive material.

#### Unhealthy Occupations.

Dr. B. W. Richardson, in an address lately delivered before the Society of Arts, London, on Industrial Pathology, said, in effect: There are seven retive causes producing disease among the working classes-first, noxious inbalation of dust and gases; second, exposure to soluble chemical substances; third, mechanical impact of foreign bodies; fourth, physical injuries from unnatural postures, &c.; fifth, exposure to damp or impure air; sixth, contact with organic parasitic forms; and seventh, exon, in the first instance, to the injury caused by the inhalation of various sorts of dust, Dr. Richardson alluded to the growth of oidium on the vine, which growth was checked by the blowing of sulphur dust on the plant. Oidium was described as a white parasitic fungus, which appeared not only on the vine, but also in the throats of persons suffering from diphtheria. Ammonia often proved injurious to

The vapor of turpentine produced a hatters. specific form of disease, and was more injurious to house painters than the lead to which their peculiar complaints were commonly attributed. Sulphide of carbon was useful as an anæsthetic agent, but produced disease and insanity when inhaled for any time by men who used it in their occupations. The fumes of pitric acid affected furriers deleteriously. The vapor of chlorine affected bleachers injuriously at first, but on continued use became innocuous. Aniline produced two distinct forms of disease-one neuralgia, the other ulceration, and when the inhalation resulted in death, the flesh was found to be of an amline or mauve color. Nitro benzine vapor produced headache, and the vapors of metals caused various diseases of the lungs, brain and stomach. The remainder of the lecture went to show that apoplexy, paralysis, insanity and various other serious diseases, were producable in artisans by contact with injurious substances and vapors, especially that of lead, which affected not only the workingman using it, but also his offspring. Cleanliness and care, the speaker affirmed, would greatly mitigate this mischief, but still the startling fact remained, that among those workmen who were exposed to the vapors of lead, the deaths were 38 per cent. in excess of the ordinary mortality. Dr. Richardson had no radical remedies to suggest for the majority of his illustrations, and contradictory as it may appear, it is unfortunately true, that it would have made no sensible difference had he done so, since, on the principle possibly that familiarity with danger breeds indifference to, or contempt for it, experience has demonstrated that, as a class, no reforms are more difficult to introduce than remedial measures of this character

Mr. Edison's new force, "the etheric force." concerning which Dr. G. M. Beard has published ance of a small spark from the core of the belix Another singular and valuable quality which while operating an interrupter by means of the nomenon lies in the fact that the current producing this spark seems not to be bound by the limitations or laws of electricity as heretofore known. A delicate galvanometer introduced into the circuit is not deflected; the current can be produced by rubbing one end of the wire upon a stove or connecting it with the gas pine; and it can be made to return upon itself, so as to produce a spark when the end of the conducting wire is bent back so as to approach its continuity. So much has been verified by exact scientific tests, but it remains to be shown whether the new "force" has any practical utility, and whether it can be employed in the production of useful results.

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New Patents.

We take from the records of the Patent Office of Washington the following specifications of certain patents, lately issued, which will be found interesting:

IMPROVEMENT IN REVOLVING PUDDLERS. Specification forming part of Letters Patent No. 172,508, dated January 18, 1876, issued to George H. Sellers, of Wilmington, Delaware.

This invention relates to the operation of puddling vessels rotating about a horizontal axis, and having fixed flues for the supply of flame or fuel and the discharge of the products of combustion.

As heretofore constructed, these vessels, whether open at both ends or at one end only, have had the joints between the rotating vessel and the fixed flues formed by broad rings on or faces of the flues, the breadth given to the surfaces of the joint being designed to prevent the escape of flame between these surfaces, which could not be brought into actual contact. In most cases one and generally all of these broad surface rings have been provided with water circulation to lower the temperature of the joints, it having been the theory of operation in such machines that these provisions were essential to the maintenance of a practical joint. In practice, however, broad surmaintaining such joints, and that this difficulty and discharged from the joint.

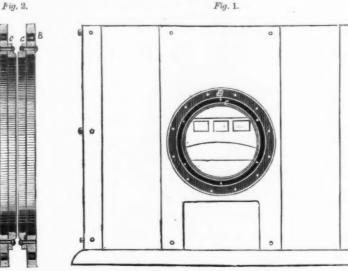
conditions of the joint and the cinder, as above set forth; but all such variations will be comprised within the knowledge of the constructor or operator.

In the accompanying drawings, which form part of this specification, Fig. 1 is an elevation of the joint rings, with the base plates to which they are attached. Fig. 2 is an enlarged section of the ring and base plate, showing the mode of attachment

The base plate A encircles the mouth of the puddling vessel, and a similar one B incloses the flues, through which flues the flame or fuel enters the vessel, and the products of combustion are discharged. To these base plates are secured the joint rings C C, preferably by riv ets, in such manner that they can be convemently removed. The rings are flanged to afford a means of securing them to the base the end or ends of the vessel, and on the face plates without exposing the fastenings to wear during the operation of the machine.

When the rotating puddling vessel is open at both ends it is only necessary that all the joint rings should be constructed and operated

substantially as hereinbefore set forth. Claim .- The method, substantially as described, of preventing the accumulation of cinder between the joint surfaces of rotary puddling vessels, which method consists in maintaining the joint surfaces at so high a temperature as to keep the penefaces and lowered temperatures do not conduce trating cinder in a friable condition duro the maintenance of a proper joint, but that ing its passage between the said joint suron the contrary they are mainly the occasion of faces, whereby this cinder is prevented from the difficulties which have been encountered in building up bregularly, and is ground between



IMPROVEMENT IN REVOLVING FURNACES.

arises from the following facts: During the | boiling stage of the puddling operation the charge swells, and, overflowing the mouth of the puddling vessel, backs up on the bottom of the flue, and across the joint between the flue and the vessel. As the iron comes to nature the charge subsides, and the liquid mass gradually retires within the vessel, the joint being close enough to retain the expanding and subsiding overflow within the flue and the vessel, yet not so close but that some portion of it will penetrate the joint, so that with the broad joint, and the lowered temperature induced thereby, whether with or without the water circulation, the cinder which penetrates the joint is chilled therein, clings to the surfaces thereof, and accumulates upon itself as the operation continues, the accretion building irregularly around the revolving surface, and almost entirely upon the lower side of the stationary surface, the whole of it attaining a degree of toughness which renders its removal extremely difficult after the operation is completed. In its conditions during the puddling operation this viscous accumulation produces great friction, and causes a gradual enlargement of the joint upon one side. To resist this and this pressure, while measurably retarding

It is the object of this invention so to apply

and consequent loss of power.

The invention consists in maintaining the joint surfaces between the revolving furnace and its fixed flues at a temperature so high as will not only prevent the overflowing cinder which penetrates the joint from becoming cold of the joint, but, by avoiding the chilling of this cinder, to keep it in so friable a condition that it will be ground up between the surfaces of the joint, and, instead of building up irregularly upon the joint, it will be discharged is accomplished (without any change in the character, supply, or application of the flame or fuel) by dispensing with any cooling circulation about the joint, and by making the surfaces of the joint rings on the open ends of the vessel, and on their corresponding flues, narrower than those heretofore employed.

In practice, the joint surfaces should be maintained at or near a red heat, and that they may withstand such temperature without the able to make the rings of wrought iron or

In the use of a puddling vessel such as

IMPROVEMENT IN PROCESSES FOR LINING OR FETTLING PUDDLING FURNACES.

Specification forming part of Letters Patent No. 171,772, dated January 4, 1876, issued to James A. Burden, of Troy, New York:

In the ordinary reverberating furnace it is necessary that the plates of iron or other material which form the sides of the furnace should be protected by some non-conducting and refractory material from the intense heat by which the iron is melted and its impurities removed. Various substances have been used for this purpose; but it has been found in practice that the best material is the mag netic iron ore brought from the mines of Northern New York.

Heretofore this ore has been used in the following manner: A sloping wall has been built around the sides of the furnace, with large se lected lumps of iron ore, commonly known as puddling ore, and then the interstices have been filled with fine ore, which, becoming partially melted, adheres to the lumps, and forms a comparatively smooth surface. To this method, however, there are many serious objections. If the lump and iron ore have not thoroughly adhered before the pig iron is tendency, great pressure has been resorted to, introduced into the furnace and melted, the liquid iron works through the fine ore bethe enlargement, greatly increases the friction tween the lumps, sometimes destroying a part or the whole of the wall, and at other times remaining mixed with the wall, which results the aforesaid discovery as to avoid the difficul- in a considerable loss of iron and ore, beside ties heretofore encountered without resorting damaging the furnace frequently in a very se-depressions in the top plates of the oven. rious manner.

The puddler, in making his heat of iron into balls, frequently welds the balls to the masser of iron thus left in the lining of the furnace involving a great loss of time, and great waste of iron and fuel before the masses can be sep-arated. The iron is so firmly united with the and tough enough to build up on the surfaces lining that it becomes a part of the furnace. and before the furnace can be put in working order it is frequently necessary to remove the lining, and sometimes large portions of the brick work and bottom of the furnace. Very frequently, too, while in operation, the lining therefrom in small grains or powder; and this wall will be partially melted or broken down, and must be repaired before introducing the pig iron for the next heat.

With the kind of fettling above described this is a delicate and tedious operation, for the large lumps of ore are taken one by one on long handled "spoon," and placed so as to fill up the breach in the wall, and often much time is wasted.

The method covered by this invention is an improvement upon the one above described aid of a water circulation, and resist the wear Instead of using, as heretofore, large lumps, from the cinder to which they are exposed dur- which are selected for this purpose, and sold at ing the operation of the machine, it is prefer- a higher price than ordinary ore by the mining companies, the ore is used as it runs from the mine, small lumps and fine together, the lumps small enough to be easily handled with shown in the accompanying drawings, with shovel. First melt a small amount of cinder gaseous fuel, a joint the surfaces of which had a breadth of 1½ inch meets all the requirements of the improved operation. Of course, a greater or less breadth may be found compatible with the maintenance of the proper of the proper of the store around the sides of the further than the furnace, and while that is in the liquid state throw into the furnace, with a shovel or other suitable instrument, small lumps and fine ore, until a sloping wall of suitable hight and admitting of being tilted over the opening thickness is formed around the sides of the further than the furnace, and while that is in the liquid settle within the store.

2. The combination of the store B having an exit flue e and removable lid d, with a tilting kettle within the store.

3. The combination of the store B having ore, until a sloping wall of suitable hight and admitting of being tilted over the opening thickness is formed around the sides of the further than the furnace, and while that is in the liquid settle within the store.

3. The combination of the store B having an exit flue e and cover d, with the kettle D admitted to the store and the store are the store.

nace. Then with a proper instrument dash the melted cinder at the bottom of the furnace over the sloping wall of ore built up as described.

The ore is cold, and the melted einder, when dashed upon it, becomes chilled and "sets," and forms a smooth impervious surface over the inner side of the lining wall, which thus becomes a complete protection to the sides of the furnace

The advantages of this method are obvious. Fine ore is preferred to lump ore, and a great saving in material is effected. As the ore is thrown in by the puddler with a shovel instead of being laid in lumps one by one, there is a saving of labor, iron and fuel. As the wall made by this process is a solid mass, the melted iron cannot penetrate it and produce the injurious effects hereinbefore described.

In making iron in a furnace lined with a wall formed of lumps of any kind of material, the angles or corpers of the lumps frequently crack off by the action of the heat, and fall into the puddled iron when nearly finished, thus damaging the product. By the improved method such accidents are prevented, as the wall made in the manner described is smooth and solid

By this process more iron is taken from the furnace in proportion to the charge, and of better quality.

The wall of lump ore formerly used presented a ragged surface, and the lumps which would break to pieces or fall bodily into the charge would not be sufficiently deoxidized to produce good wrought iron; but in the use of this improved lining it is found that as the cinder melts under the intense heat, small portions of the lining are slowly and perfectly deoxi-dized, and are added to the charge, so that there is an actual gain of from two and one-half to five per cent. in quantity, as well as a better quality, of wrought iron produced.

If in making the furnace the lining wall becomes partially broken down, it is easily re-paired. After the heat is withdrawn from the furnace the workman leaves a portion of the melted cinder at the bottom of the furnace. He then with a shovel fills up the breach in the wall with small lumps and fine ore, and dashes the cinder over it, in the manner above described, making the repairs in much less time than was absolutely necessary by the old method.

Claim .- The method of lining or fettling puddling furnaces, by throwing in coarse and fine iron ore, mixed together as it comes from the mine, forming therewith a sloping bank or wall, and coating and compacting it together by dashing over it melted cinder from the furnace

We take the following abstract of new patents, issued Feb. 8, from the official record :

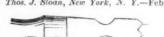
SLIDING BOLT FOR WINDOW SASHES, ETC. To Cyrus W. Saladee, Washington, D. C.-Feb. 8.-A swinging crank lever, with pivotal ooss bearing, being so attached to a sliding bolt as easily and freely to operate the same by means of the depending knob handle.

The swinging lever or crank D, having the



pivotal boss bearing H, and suitably connected to the sliding bolt B, at a point between the fulcrum and the crank handle, together with the guide loops C C', all arranged upon the outer surface of the base plate A.

SCREW DRIVER To Thos. J. Sloan, New York, N. Y .- Feb. 8.



The angularly notched screw driver, constructed with the beveled corners a' c

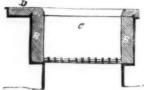
WOOD SCREW. To Henry A. Doty, Janesville, Wisconsin .-



Feb. 28.-A wood screw provided with a pointed projection, D, extending beyond the thread.

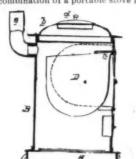
To J. L. Hutchinson, Baltimore, Md.-Feb. 15.—The overlapping horizontal plates rest in

right fire bricks B B and C, and



apping horizontal bricks D, combined with depressed stove plates, adapted to receive said

PORTABLE KETTLE AND HEATER To Jos. Hyde, Wilmington, Del.—Feb. 15.— The combination of a portable stove having



40,000 44

#### Eron.

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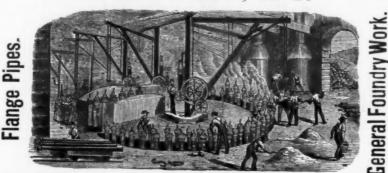
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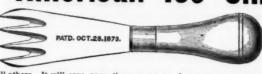
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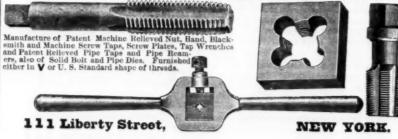
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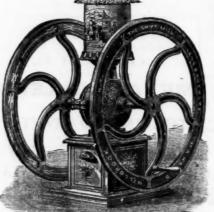
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ALSO Lane's Portable Coffee Roaster Will roast 30 to 40 lbs. at once, and can be used as a stove at other times. Send for descriptive list,

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Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the same reaches different stations of his beat. The instrument is complete in itself, portable and as reliable as the best lever watch. It requires no fixture or wires communicating from room to room, as is the case with the ordinary watch clocks. A small inexpensive stationary key is alone required at each station. The instrument will, in all cases, be warranted perfect and satisfactory.

\*\*CAUTION.\*\*—The public are notified that in my suit against Imhæuser & Co., of New York, a decree was made in my favor, June 10, 1874.

\*\*Proceedings have been commenced against said Imhæuser & Co., for selling clocks contrary to the order of the Court, and especially the clock with a series of springs in the cover, and marked "Patented Oct. 20th, 1874." All persons discovered using these infringing clocks will be dealt with according to law.

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> features of the Common Reversibles, and offers the following improvements: 1. It prevents the possibility of the pin raising in use. This is accomplished by a three sided plug (A), which, when the hinge working up of the pin is necessarily v.

This Butt avoids all of the objectionable

ual, it is pressed back each time the door is done by merely tapping under the plug at A.

3. It is impossible for the door to be opened from the outside by removing the pins, as this cannot be done when the Butt is closed. This is a valuable feature in the case of doors opening on porches or halls.

These goods are sold on the same list and as low as the old style Reversible, and are fast superseding them. Sample by mail when requested.

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RHODE ISLAND HORSE SHOE CO.,

PERKINS and RHODE ISLAND PATTERNS of HORSE AND MULE SHOES. form, only dates from the reign of Charles II., when it was made to replace the coronal worn getting to England I made several ineffectual equal to the celebrated Louisville lime.

tions.

A strike of very novel character has taken place at the Trenton collicries, Durham, England, its object being to compel the operators to provide them with pure water and decent acmmodations. The Sanitary Record says 'They allege that their sufferings, owing to a want of water, both for drinking and for do mestic purposes, have been very considerable, and their complaints receive no attention. Acts of Parliament and orders of the local government board are stated to be, as far as they are concerned, mere dead letters; and the men, who, with their families, number about 3000 persons, refuse to do any more work until they are provided with a proper water supply, and with decent dwelling accommodation. The neglect which has characterized some of the Durham colliery districts is but too well known, and although in some isolated localities excellent dwelling accommodations and every necessary sanitary requirement are provided for the colliers, there are many places in which such a thing as a closet is unknown, and one but the filthiest water can be procured uness it is sought at a considerable distance. The strike at least has our sympathy, and we trust that it will teach some of the wealthy colliery owners a lesson in santary administration."

This is a strike in which-presuming the mplaints are well founded-the men are entitled to the sympathy of all who appreciate the importance of healthful conditions We should not be sorry to see a more intelligent regard on the part of American working men for better ventilation, cleaner surround ings and more decent latrines. Probably all necessary reforms could be secured without re course to the expedient of strikes.

#### The National Steel Tube Cleaner.

We show in the accompanying illustration an improved apparatus for cleaning the flues of steam boilers. - All intelligent users of steam

appreciate the economy of keeping the flues of their boilers clean and free from deposits of unconsumed carben and ash, which are non conductors of heat and cause a marked difference in the working of a boiler.

The National tube cleaner is a plain, practical, durable tool, and has many points of advantage. Among these may be mentioned the absence of small steel springs or thin bands of metal, which, when thrust into a hot flue, lose their temper and elastici ty. The scraping edges. supported on blades of ssemer steel, are cut from saw plates and are held in place by doubly rveted braces of mallea ble iron. The blades are dovetailed into the maleable iron butt, which insures their being held firmly in place. The threaded steel rod in the center is provided with

a washer, which runs up and down upon it, by means of which the spread of the blades is adjusted to the size of the flue. These implements received the silver medal at the American Institute in 1875, the first premium at the last industrial exhibition in Pittsburgh, and also at the Providence (R. I.) exhibition. The agency for their sale is held by the Chalmers-Spence Co., foot of East Ninth street, New York.

### The Crown of England.

The Liverpool Albion says of this interesting piece of jewelry: "One gem at least in the crown which was borne before Her Majesty on 18 closed, fits into the notches (BB). As the Tuesday is of great antiquity, and of high historic interest. The large sapphire, the partial drilling of which suggests that it may have formerly figured in the turban of some Eastern | lbs. each. The sulphate of sods, with the bo-Sultan, was purchased, it is true, by George 2. Driving out the pin when desired is easily IV.; but in the front of the diadem, and in the center of a Maltese cross of diamonds, is the had about a ton of this deposit sent up to San by the world at large, for truth is irresistible. famous ruby given to Edward the Black Prince by Pedro, King of Castile, after the battle of Najeva, A. D. 1367. This same ruby was worn by Henry V. in his helmet at Agincourt. The gem is pierced right through. Otherwise, albeit each particular diamond, ruby, emerald and pearl in the dazzling galaxy may have its own pedigree and legend, no authentic record of the crown jewels has been preserved, and Queen Victoria's crown, structurally speaking, is a very modern affair indeed. The famous Tory crown of Sir Robert Vyner, which the crazy woman mutilated in 1815, had served at the coronation of William IV.; but, as it weighed more than seven pounds troy, it was decided that the ponderous gewgaw should be broken up, and that a new and permanent crown imperial should be fashioned. The new crown, after having been examined and approved by Her Majesty, was exhibited during the last week in June, 1838, to a large party of friends by Messrs. Rundell & Bridge, at their premises in Ludgate Hill. Originally the cap was of purple, or rather dark blue velvet; but, at the last moment, this was changed for one of crimson. Purple is, indeed, the proper imperial hue; but it should not be forgotten that English refined borax. such a purple cap of maintenance is still extant in the crown of St. Edward, which, in its actual to San Francisco, got the deeds for land all in and Decker's Creek, in some places upward of

Her Majesty's crown is constructed out 1838, and which included the diadem worn by Mary of Modena, by Queen Caroline and Queen Charlotte as Queen's Consort, and that ass imed by Mary II. and Anne as Queens Regnant. Thus the British crown may, as a comparatively new thing made up of very ancient materials, be held to present a sufficiently striking likeitself been broken into very small pieces, which has been patched and mended, enlarged and renovated, over and over again,

#### California Borax.

The extensive employment of borax in the iron working industries brings it prominently to the notice of a very large class of our readers, many of whom know but little concerning it beyond its utility as a flux. The following account, by Mr. Arthur Robottom, of the disovery of the wonderful deposits of borax in the Slate Range of Mountain, in Southern California will be read with interest :

Some 16 years ago tincal (impure borate of n Northern California. I got a person to go and report upon it, and he found the supply rould be limited. Parties in Nevada, at Fish Lake and Teels Marsh, began making borax from the borate of soda that exists in those dis- Chicago Times thus heralds it to the world : tricts. Borax at this time (7 years ago) was selling in San Francisco at 28 cents per lb., and only a small deposit of crude borate of soda upon it began making borax, thinking that this than a substitute for fuel, produced at comrice would continue. I had correspondents paratively no expense, and by the application in Nevada, and was kept well advised of what of the simplest scientific contrivance. The in-

£75 per ton. I then decided to go to Nevada gentlemen held land in the Slate Range, and a poor miner, and got down to Los Angelos, wags, banditti and others, and led a rough every 12 miles, and there are no other houses, for the country produces nothing but sagewild, howling wilderness, and in some parts no visit there was no house or shanty all the way, now there is one small place where they keep corn for the mules, named after me, called Robottom's springs.

At the lake I met two men-an old Califor nian miner and a hunter-with whom I stopped some time. I found borax to my heart's content. Before going down I had made arrangements to have some of the land transferred to me, and a deed was drawn up to this effect in San Francisco. After taking a good survey of a million or more, for I at once saw that borax could at some future period be got from this Francisco, cheaper than from any other deposit. Francisco and on to England, and I have since

had a good many shipments. about 4 feet high and 1 to 2 feet thick rate of soda there are a few hundred acres of medium quality, yielding about 33 per cent put into cowhide baskets, then put in a dump

A Strike for Better Sanitary Condi- by the Confessor at the altar. St. Edward's attempts to induce makers to work this discovery has arches and fillets covered with large covery. At length a company was formed, muiti-covered jewels of no very exceptional called "The Slate Range Borax Company, value; and this is the one which Colonel Blood Limited." I got Riddell, in San Francisco, to commence borax making in real good earnest, of the fragments of half a dozen bygone in- and the bulk of his borax has come from this signia of regality which were broken up in lake, and now upwards of 120 tons per month are being turned out at this district alone. This is principally from the crude borax of soda after being once crystallized. It is no use work ing at the native borax or the under surfac till the borax of soda is cleared away. I can plainly see that the deposit at Slate Range i tremendous, and when it can be sent to Saa ness to the British Constitution, which has Francisco or Los Angelos by rail, the price must and will come much lower.

According to the San Francisco Commercia Herald the Riddell Company made 600 tons of borax last year (1875), and intend to increase their product during 1876 to 1000 tons. The total production of borax in Nevada and California reached last year 2000 tons.

#### Another Mechanical Miracle.

The credulity with which intelligent journalsts accept as true the most extravagant and impossible statements concerning new inventions, indicate a degree of simple faith and an abiding trust in human nature which is not ofoda), was found at the bottom of Clear Lake ten found now-a-days, except among bolders of Keeley motor stock. The latest "invention" of this kind is a device for producing unlimited heat by burning seven-eighths water and oneeighth of something else mixed with it. The "Yesterday we were shown what promises to

be the most wonderful invention of the age, every one in Nevada that had any land with and one which promises to revolutionize our entire domestic economy. It is nothing less vention is denominated the hydro-carbon burner About three years ago Mr. Wood made and gas generator. By the application of the another attempt to put up the price of borax to invention, ordinary coal oil and water may be made to I roduce heat enough to run an engine, to examine the borate of soda deposits. After propel machinery, heat a cooking stove, illumdoing this I went on to San Francisco, and my inate a mansion, or perform any other result Many people hardly knew what borax was. I gave and received all the information possible.

In San Francisco I was waited now. Riddell, a gentleman connected with one of the banks, and a Mr. Dodge. Both these water and oil will astonish the scientist as the unschooled and undisciplined mind. The they asked me to go down and see if borax process is not complicated or mysterious. It is existed there as in Nevada, I dressed up as simply the result which overwhelms the mind with its wonderful possibilities. Prof. Kendall, mixed up with miners, teamsters and scally- the well known chemist, who has experimented with this invention, says that all the fire to do My expedition involved considerable the cooking and washing for six persons, seven trouble, and I had to walk many miles, and days, can be produced for 50 cents. The aplive with the friends referred to above, sleep-paratus burns from one-fourth to seven-eighths ing frequently on the sand, under wagons, in as much water as it does any other combustible stables, etc., for small shanties only exist about fluid, and produces a result which cannot fall to fill every one with amazement who witness its operations. For household purposes it is brush for miles. No grass, no trees, a perfect unexcelled. There is no dust or filth, smoke wild, howling wilderness, and in some parts no or disagreeable scent about it. Gas can be water for miles. This refers to the road that furnished from any cooking stove to illuminate runs from Los Angelos to Cerro Gordo. You a house for 50 cents per thousand feet. The have to strike off this road a distance of 42 light produced is clear, bright and steady, far miles and you get the borax lake. On my first superior in quality and illuminating properties to the ordinary gas produced from coke, which costs from \$3 to \$3.50 per 1000 feet. The attachment can be made to any stove, range or furnace, or motive power, with entirely satisfactory results. A patent has been procured, and the inventor, a very eminent scientific gen tleman, is now prepared to enter the field, and capture the public with an invention, obvious on sight, and more useful to civilized man than could be the realization of the wildest dreams created by the alleged claims of the Keeley the place, I thought I should be worth at least motor, which have created so much comment and interest in the public mind. The simplicity and practicability of this apparatus can be delake and put on board a sailing vessel, either in termined on sight, and it is destined to go into the port of Wilmington, Los Angelos, or at San general use as soon as its merits become known francisco, cheaper than from any other deposit. The crude borate of soda on the surface in some tific men, and the principles of its foundation places is 3 feet thick. Then at other parts there have been pronounced sound and in accordance is a foot of blue mud just under the crude bo- with chemical science. Its discovery is more rate of soda, filled with very peculiar crystals; then below this there is a solid mass of pure

waluable to mankind than the alchemist's stone.

By means of it the sufferings of the poor will borax combined with sulphate of so.lu. This be ameliorated and their sufferings assuaged. is the most extraordinary deposit in the world, for there are lumps of pure borax from 1 to 4 ings of the world will follow him. The genurax, was put into warm water, which dissolved | meness and utility of this great and wonderful the former, and the pure borax remained. I invention is destined soon to be acknowledged

Iron in Monongahela County, West The most curious thing in the lake is a reef Virginia .- Monougahela county, West Vir of carbonate of soda, and near to the reef there ginia, is said to be rich in useful minerals. In are a let of pyramids of the same product, addition to an abundance of coal and limestone, there are said to be nine distinct veins, or decenter of the lake there is a ridge of common posits, of iron ore in this county. The first, or salt. Between the common salt and the bo- lowest, is ordinarily about two feet thick-or shallow water, very warm, filled with crystals, The next above is of the same thickness and pink, rather green and light brown. The quality. The next above is about 18 inches water has the appearance of a peacock's tall in thick, of rather inferior quality, making brittle some places, and in others it has a pink ap- iron, yielding about 33 per cent. The next pearance. Boilers and vats have been erected above is about two feet thick, good quality, on the land. The crude borate of soda is first yielding about 45 per cent. The next above is about 18 inches thick, of good quality, yielding eart, taken to the boilers and boiled for a cer- about 45 per cent. The next above is about tain time. The solution is then run into vats; two feet thick, good quality, yielding about 45 it crystallizes, and makes the best borax I ever per cent. The next above is about 18 inches saw. This, on the market, is called "concenthick, good quality, yielding about 35 per cent. trated "borax. In that district it never rains. The next above is about two feet thick, inferior The climate is fearfully hot. The last time I was quality, yielding about 45 per cent. The nex t there it was never under 106', and sometimes and last above, about two feet thick, of good up to 115° in the shade. Therefore, when the quality, yielding about 45 per cent. All these crystal borax is exposed to the sun it becomes strata crop out on the hill sides. They vary in almost anhydrous, and much stronger than thickness according to locality. There is an extraordinary deposit or lode of limestone, After collecting a lot of specimens, I returned cropping out along the ravines of Cheat River

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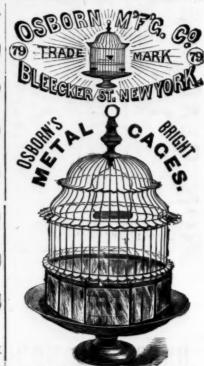
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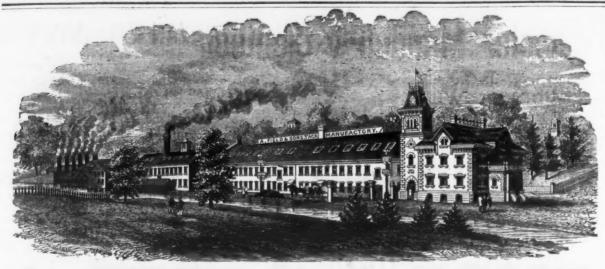
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Mr. Ward Cheney, who died at South Manchester, Conn., on the 22d inst., is entitled to recognition as the pioneer of a great and grow ing bome industry-silk manufacture. Mr. Cheney and his brothers began the manufacture of sewing silk 30 years ago, in quite a small and experimental way. The goods being popular almost from the start, the business was radually extended, the company adding dress goods to their productions. Three mills are now run by the company, giving employment to 3500 people of both sexes. Mr. Cheney was a generous and public spirited man, identifying the interests of his operatives and fellow citizens with his own. He did much for the romotion of education and religion, building churches, schools, and a hall for lectures, be ide assisting and suggesting in the erection of working people's residences, and in the general plan and embellishment of the little town A history of Mr. Cheney's life and labors would cover the most interesting period of our national industrial development, and we hope will be written by some one fitted for the ask. The memory of our great mechanics and manufacturers, no less than that of our great statesman and successful soldiers, should be cherished by the people, for theirs are prac tical triumphs which bring lasting benefit, while the triumphs of statecraft, diplomacy and the sword are more often a curse than s blessing.

#### Patents in the United States.

The last annual report of the U.S. Commissioner of Patents states that there were received during 1875 21,638 applications for patents, of which 14,837 (including reissues and designs) were granted. Following the practice of former years, the commissioner gives a table showing the number of patents granted to residents of the different States, Territories and foreign countries during the year. It is interesting to notice the wide differences which exist. For instance, in Idaho Territory only one patent was granted, the population being 14,999. Against this we may put the State of New York, where 3771 patents were issued, being in the proportion of one patent per 1163 inhabitants.

The density of the patent taking population is greatest of all in the District of Columbia, where one person out of every 615 appears to be a patentee. This, however, can hardly represent the inventive activity of the district, and the high proportion is probably due to the fact that many inventors acquire a temporary domicile in Washington for the purpose of prosecuting their applications. The absolute number of patents taken out is small, reaching only 214. New Mexico Territory contributes the smallest proportion of patents, there being only 1 to every 37,101 inhabitants. The agricultural States do not, as might have been expected, make much show. Only 31 patents (1 to every 32,161) come from Alabama. North Carolina contributes 37, or 1 to every 28,956, and South Carolina sends 46, or 1 to each 17, 513 persons.

The office is rapidly outgrowing the accomnodation which the building affords, especially in the model-rooms. About 10,000 rejected models were removed in consequence "to an open space under the roof of the west wing of the Patent Office building. The floor of this furnace. In 1874 they were \$6.50 for lump, attic and the model-shelves are composed of \$6 for "run of mine," and \$5.50 for furnace. rough boards, and the place itself is very difficult of access. The trouble increases yearly, and if no provision can be made for relief in this regard it will be necessary to do away en-tirely with models." The sooner the better, say all who have anything to do with patents.

### Strength of Rail Joints.

At a late meeting in the hall of the Manches er (England) Institution of Civil Engineers, the following paper was read:

The introduction of the plain fish-plates now rdinarily used was a great advantage at the time to the railway world, mainly for preventlaterally, but since speed has increased, and weight of engines also, the plain fish-plates have that of giving the rail joint the same stiffness d rail so as to joint is afforded as compared with that of the troduction of steel rails necessitating the aboliadapted for suspended joint, but requiring base erally used there is still less stiffness. Several given rise to the design of the deep fish-plate for flange rails, similar to what has been already adopted for double-headed rail sections on and Irregular Turned Work.

In the solid rails of the Jobbing Houses that keep our goods in stock:

A many English railways. By using one fish-plate of this kind on the bolt-head side of the joint a material improvement is obtained, inasmuch as such joint possesses 80 per cent. of the stiffness of the solid rails. As regards the use of two deep fish-plates the experiments are conclusive as to the great increase in stiffness, being even things pressure cylinder being 19 inches and the low pressure 45 inches diameter. The engines are compound; the high pressure cylinder being 19 inches and the low pressure 45 inches diameter. The engines are compound; the high pressure cylinder being 19 inches and the low pressure 45 inches diameter, with a stroke as to the great increase in stiffness, being even stiffer than the rail both as regards strength and black of 9 feet. They drive a single stern wheel 29 feet diameter and 29 feet wide, the paddle boards being 83 inches deep. The main shaft is 35 feet long, 15 inches diameter, and weight complete, with cranks, &c., 25 tons. many English railways. By using one fish-plate

the rail than on the joint, proving a slight superiority of the joint, even in this respect best shown by the fact that the bolts were not the least burt after such an extremely heavy test.

Estimation of Manganese in Cast Iron. S. Kern, of St. Petersburgh, describes a new process for the estimation of manganese in cast iron, as follows: 0.5 grm. of the same sample is dissolved in a high glass in 15 c. c. of drochlorie acid, 1.12 sp. gr. At the end of this operation about 0.2 grm. of potassium chlorate is added in order to convert all the iron into ferric chloride. If silica occur in the sample it is found in the form of a precipitate which is filtered from the solution. The liquor then contains ferric chloride (Fe $_2$ Cl $_4$ ), and manganous chloride (MnCl2). A solution of caustic potash is next added; Fe2(HO), and Mn(HO)2 fall down as precipitates; to the solution is im-mediately added about 40 to 50 c. c. of a concentrated solution of ammonium chloride (NH3HCI), and the mixture is boiled for about ten to fifteen minutes. The liquor is then filtered from the brownish red precipitate of hydrated ferric oxide, and to the colorless solution ammonium sulphide (NH, SH) is added : a flesh colored precipitate of manganese sulphide (MnS) is obtained, which is filtered from the solution, quickly washed, placed in a porcelain crueible, and sulphuric acid. Manganous sulphate (MnSO4) is then obtained, which, evaporated to dryness and next ignited, yields red mangano-manganic oxide (Mn<sub>2</sub>O<sub>4</sub>). This oxide is weighed, and as it contains 72.05 per cent. of manganese, the percentage of manganese in the sample may be easily calculated. This process is based upon the solubility of freshly precipitated Mn(OH)2 in a concentrated solution of NH3HCl, and on the insolubility of the hydrated ferric oxide in the same solution. My method has been used in several analyses of spiegeleisen with success, and thus may be proposed for the use of analysts.

Anthracite Coke .- A peculiar coke has een made at the Rhos Aman Collieries, near Swansea, from a mixture of 60 per cent. anthracite, 85 per cent. bituminous coal, and 5 per cent. pitch. This coke is said to be exceed ingly bright, small in grain, moderately sonorous, and of average density. It is remarkably clean. It is claimed that 193 lbs. of this coke melted 30 cwt. of pig iron and old railway chairs. The iron came down very hot and clean, although the quantity of coke used was less than half that usually employed at the same works. The Landore Steel Works Company have two furnaces in blast, one on hematite the other on spiegeleisen. The latter has only recently been started; the first has been going some time on anthracite coke. The furnace is 65 feet high and 17 feet in the bosh. The make of pig iron is 300 tons per week, each ton requiring 2 tons of 50 per cent. ore, and 18 cwt. only of coke; with the best Glamorgan coke 27 cwt. were required to do the same work. The facts are very remarkable, and indicate that the new fuel possesses unusual value.

Port Henry Ores .- In view of the depression in business, the Port Henry ore producers offer their ores for the ensuing season of canal navigation at \$4.50 per ton for selected lumps for puddling, and \$3.75 for furnace ore. The prices last year were \$4.90 for lump, and \$4 for These are four months' note prices at wharf at Port Henry. A discount of 5 per cent. is allowed for cash. The Port Henry Ore Company announces that they will not offer any "vein of mine" this season.

Wonderful as are the mineral productions of the State of Nevada, every day but confirms the conviction that but little is known of the real extent and value of her mineral deposits. Not only are the more precious metals found in untold millions, but the less valuable metals also exist in quantities which, but for the overwhelming deposits of gold and silver, would be sufficient to attract prospectors and capitalists. ing accidents by keeping the rails in position First comes the intelligence of wast bodies of coal struck in one section, then cinnabar formations of unbroken extent and untold wealth been found deficient in one vital respect, viz., are encountered, and borax, the real uses of which are just beginning to be known to the ore continuous road. As the stiffness of the reliable intelligence of copper deposis in the joint with plain fish-plates principally depends range which divides Alkali Valley from Masou's upon the section of the rail and the fishing Valley in the Walker River section. These deangle, often only a third of the stiffness of the posits lie about 40 miles south and east of Virginia, and are of unknown extent and value. solid rail, but even in the best cases hardly more The ledge is from 5 to 20 feet in width, has a than half the rail stiffness is obtained. The in- north and south trend, and is well defined, being a contact vein with a western wall of tion of notches in the rail flange as destructive limestone, while the eastern is quartzite. The to the strength of the rail, has led to the design ore exists in the form of cerbonates and red of the French or German fish-plate (eclisse arret) oxides, and is found to be very rich. A few sulphurets have also been found, but none of plates at the joint sleepers. Even with this these have been reduced. Since the present plan the experiments show only two-thirds of owners have been in possession of the claim, the strength of the solid rail is obtained, and they have taken out and disposed of \$50,000 as only one fish-plate of this description is gen- worth of ore, and have as yet scarcely commenced the development of the mine. The other plans exist, more or less complicated, but cost of extracting and getting the ore to market as none have yet given the same stiffness as the is now about 1 cent per lb. The mine is only rail, combined with cheapness in cost and 20 miles southeast of the El Dorado coal mine, maintenance, they have not come into general and when the narrow gauge railroad shall have use, and the weak joint, with ordinary plain been completed to that point, the coat of transfish-plates, is still generally adopted. This has portation of this copper ore will be greatly reduced.

> Messrs. Carroll & Co., of Pittsburgh, have lately built boilers for a very remarkable steam

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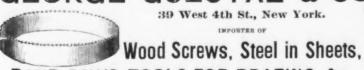
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Of every description, including Circular, Shingle, Cross-Cut, Mill, Hand, Soydel's "Ashantee" Pocket Hammock WOOD SAWS, Etc., Etc.

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Movable Toothed Circular Saws, PERFORATED CROSS-CUT

And SOLID SAWS of all kinds.

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"Diamond" PLANE IRONS, EXTRA PLATED TABLE CUTLERY. PATENT FORGED OX SHOES. The only Shoe made with concavity to fit hoof. BENCH AND MOULDING PLANES of every description, &c., &c. Drop Forgings to order. Address for Catalogue with stamp.

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Exact Model of S. & W. No. I and No. I 1-2 Revolvers. These Arms are Half Nickel Plated and are equal in style of finish to the best Arms in the country. Quality of workmanship and material first-class; warranted. Price less than any other Hinge Barrel Cartridge Revolver of same quality in the market. SOLE AGENTS:

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Blind Trimmings, Glaziers' Points, &c. &c We offer from Stock and Contracts at generally reduced prices;

35,000 doz. Window Pollies. 20,000 lbs. Boardman's Barbed Staples. 30,000 lbs. Machine Finishing Nails, 500 doz. Sash Cord. Full stock of Foreign and Domestic Glue, Sand Paper, Emery Wheels, Emery Grinders, Washington Milis Emery, American Window Glass, etc., etc.

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A large stock always on hand at lowest prices.

Coopers' Tools For Turpentine Trade. CHAS E. LITTLE, 59 Fulton St., N. V.

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Banker and Note Broker, Nos. 3 and 5 Wall Street, NEW YORK. HARDWARE, METAL, IRON, RUBBER, SHOE, PAPER AND PAPER HANGINGS, LUMBER, COALL

AND RAILROAD PAPER WANTED. ADVANCES MADE ON BUSINESS PAPER AND OTRER SECURITIES.

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Pen and Pocket Cutlery, Solid Steel Scissors, Shears, Razors, Russia Leather Strops, Hones, &c. Sole Proprietors of the renowned full concaved patent

"ELECTRIC RAZORS," And the "ELECTRIC SHE ARS." Nickel Bows.

Agents for the BENGALL RAZORS. AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c. 91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

TABLE KNIVES AND FORKS OF ALL



Also the exclusive makers of the "Patent Ivery" or Celluloid Knife, which is the mo White Handle Knife known. These Handles never get loose, Always call for the "Trade Mark" "MERIDEN CUTLERY COMPANY" on the MERIDEN CUTLERY CO., 49 Chambers St., N. Y

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PATENT FINE PEN & POCKET CUTLERY

WEST MERIDEN, CONN.

made that are put together in such a manner that there is no strain on the cov
nife. We warrant our knives equal in cutting qualities and workmanship to any
ed by English makers as the Best American Knife. We also make NICKEL & SILVER PLATED POCKET KNIVES

or become discolored when used as a Fruit Knife, and their cuttin; qualities are equal Orders filled from the factory, and in New York by Messrs. J. Clark Wilson bekman Street (who have a full stock of all patterns always on hand, and also by

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# ROGERS & BROTHER,

# Fine Electro Silver Plate,

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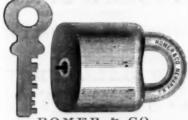
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Caster Frames, Ladles, &c.
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Fine Table CUTLERY NEWARK, N. J.



ROMER & CO., stablished 1837. Manufacturers of Patent Sc Jail Locks. Brass Pad Locks for Rai vitches. Also, Patent Stationary R. R.

EMANUEL MARX,

Table & Pocket Cutlery Solid Steel Shears, Britannia Spoons, Bri

OFFICE & WAREROOMS, 106 Chambers Street, near Church, New York. Sent for Price List. AMERICAN PEN AND POCKET KNIVES

Aaron Burkinshaw. AB MASSACHUSETTS My Blades are forged from the best Cast Steel, and warranted. To me was awarded the Gold MEDAL of the Connecticut State Agricultural Society; also a seat. and Diploma from the Mass Mechanica' Ase'n Sept., 1981.

Young's Patent Folding Scissors.



### Cuttery.

Office of THE NEW YORK KNIFE CO., WALKILL RIVER WORKS, WALDEN, OBANGE CO., N. Y., Mar. 17th, 1876.

### NOTICE TO THE TRADE.

We have this day withdrawn the Ag ncy of our TABLE AND POCKET CUILKRY from ROWE, BABCOCK & POST, of No. 120 Chambers Street, New York, and placed our goods with THE WIEBUSCH & HILGER HARDWARE CO., of Nos.

84 and 86 Chambers Street. New York, who will act as our Agents, where a full line of our samp es and goods may be seen.

We would caution our customers against buying goods stamped "NEW YORK CUTLERY CO.," sold as Cutlery manufactured by TH.6 NEW YORK KNIFE CO., Walden, Orange Co., N. Y.

THE NEW YORK KNIFE CO., THOS. J. BRADLEY, Prest.

ESTABLISHED 1852.

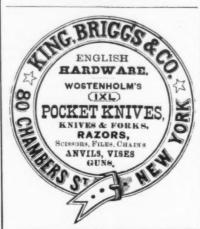
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The demand for Joseph Rodgers & ons oductions having considerably increased, they ave, in order to meet it, greatly extended their Manufacturing Premises and Steam wer.

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### ASLINE WARD, 101 and 103 Duane Street, N. Y.

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FREDERICK WARD & CO., Sheffeld, Cutiery and Table Knives. CORPORATE WARE.



Office of The Iron Age, 220 South Fourth st., PHILADELPHIA, March 28, 1876.

The improvement in business noted in our last is still maintained, and there is a fair degree of activity in most of the leading branches of trade. Money is in abundant supply at from 5 to 7 per cent., for good mercantile paper, and call loans at 3½ to 4½ per cent.

The coal trade has continued exceedingly dull during the past week. There is little production, and few orders for immediate delivery, and the outlook is far from encouraging. the forty colleries owned and operated by the Reading Coal and Iron Company, twenty-five resumed yesterday morning, and of the numer ous collieries owned and worked by the Lehigh and Wilkesbarre companies, all but seven were to have resumed yesterday morning, with a full working force. Resumption is also understood to be general among the private operators of mines, although some slight check upon pro duction will probably continue throughout the rear, as the aggregate capacity of the anthraite collieries considerably exceeds the present demand of the country, and an understanding exists among the parties most deeply interested that they will not overstock the market to an injurious extent. The movement in bituminous coals must be in a great measure for the future, not for present delivery, as the tonnage reports do not show much stir in trade. The opening of the canal season of the Chesapeake and Ohio Canal will bring the tonnage from the Cumberland district 25,000 tons per week, and this is expected to be fully under way this There is no expectation of any serious trouble in regard to the wages question in the Cumberland district: the men have been well remunerated for their services for several years past, and now that it becomes necessary to reduce the price of this coal, to meet Pennsylvania fuels, there is a general willingness to neet the exigencies of the case.

The iron trade remains without any material change; the business of the past week has been will be still further reduced, in case of a further decline in prices, which, however, from present indications, is not very probable. In many of eyes. our iron working establishments there is a steady improvement apparent, and it is thought that the present activity will be permanent. The improvement is most marked in those branches connected with railway supplies, but other departments will, no doubt, soon participate in the benefits derived from a recovery in Locomotive Works, which now employ upward of 1500 men, a portion of whom are working overtime. We were informed to-day by one of the members of this firm that they are busier now than at any period since 1873, and though their present activity is partly due to the fact that their contracts are for quick dewe were informed that they are now building them at about ten per cent. less in currency than they used to cost in gold previous to 1860, and that the material and construction is vastly superior to what it was then; this they are enabled to do chiefly on account of the use of nachinery in many portions of the work.

In the hardware trade a very fair business is reported; on the whole, there is a marked improvement as compared with the corresponding period of last year; the trade is well distributed. and a good feeling prevails throughout, though collections are far from satisfactory, even from the West and South, where they ought to have money, from the large and valuable crops just marketed.

The Centennial will, doubtless, bring a vast trade is expected to result in course of the next few weeks; in fact, it is probable business at merchants will, in a measure, defer their purchases until they visit the Exposition.

goods forward in time; this is particularly the they are doing. case with our American exhibits, most of the foreign nations having already got theirs on the ground, and some are already in position. Five trans-Atlantic steamers have arrived during the week, with exhibits from Liverpool, Havre, Antwerp, Hamburg, and also from Rio, by steamer Donate.

The chief attraction in Machinery Hall at present is the Corliss engine, which has been shipped in sections, requiring 60 cars, and is now rapidly being placed in position. With its tremendous walking beams, pistons, bolts and bearings, it is almost overwhelming in its effects upon the mind of the visitor, and is calculated to show the utter nothingness of man as a power for labor. It will require considerable time to construct the connecting steam pipes from the brick foundation to the cylinders of the engine, but the foundations are being dug, preparatory thereto, as rapidly as possible. A few feel to the west of the Corliss engine

blowing machine to be exhibited by I. P. Morris & Co. It is designed for a blast furnace for smelting iron. Some idea of the size and power may be formed from the statement that from the floor to the top of the air cylinder is 37 feet the floor to the top of the air cylinder is 37 feet 6 inches: the steam cylinder is 50 inches in diameter, and has a 7 feet stroke. The blowing cylinder is 90 inches in diameter, the stroke being the same as the steam cylinder. There are two fly-wheels 24 feet in diameter, which weigh 21 tons each. The entire weight of the machine is about 119 tons, and the estimated value about

PHILADELPHIA CORRESPONDENCE. \$20,000. The mechanics have been engaged in the putting up about three weeks, and it will require another week to fit it together. The revolutions of the fly-wheels will be about 16 to the minute, the blast sent by it averaging 8 to 9 pounds to the square inch of cylinder surface. Steam will be furnished from the boiler rooms to the south of Machinery Hall, of which there are two, containing 20 boilers each. The blowing machine is furnished with what are known to machinists as patent balance valves, for the purpose of equalizing the steam pressure on both sides to secure evenness of

The engine is supported by four iron columns, 16 inches square at the bottom, 12 inches at the top, each being 29 feet in hight. When completed there will be four rows of iron grating around the machine, from the air cylinder downward, and cast iron winding stairways will give access to all portions of the work. The spokes of the fly-wheels are solid on one side, hollow on the other, and are blocked up to keep the wheels from turning; huge blocks and ropes are used to lift the masses of iron into position, and as spoke after spoke and bolt after bolt is placed into position, the science of mechanic art is seen in its strength and beauty.

In front of Machinery Hall this morning, two horse teams, four horse trucks and six horse catamarans were posted, laden with heavy machinery to be placed in the spaces allotted. There was a crowd around the place watching the process of unloading ponderous specimens of the mechanic arts. Among the curious points presented was an exhibition-it can be seen forty times a day-of the power of the lifting jack. This jack is rather peculiar in its construction, and yet follows the ordinary principle of "catch and lift." Archimedes, it is said, just after he had discovered "Eureka," is charged with having remarked, "if you give me a fulerum and lever I will lift the world." There is but little leverage in this machine, which is about two feet in hight, and has a crank near the top, a very light piece of iron, which is used as a handle, doing all the work larger than for some time previous, but there is The usual ratchet is retained, but the surprisno general activity, and no disposition to enter ing part of the machine is the steady way in into any extended operations. Production is which it puts its nose under the most pouder-being curtahed in some districts, and it is said ous machinery, and as the lever is moved up and down like a pump handle, the personi-

#### Pittsburgh at the Centennial.

From present indications, we judge that the iron industries of Pit:sburgh and vicinity will be well represented at the Centennial. The Edgar Thomson Steel Works, the Union Iron this most important interest. Chief among all our establishments in this line is the Baldwin and the Keystone Bridge Company, will occupy and the Keystone Bridge Company, will occupy a space 25 by 33 feet, in the main building. These establishments are intimately connected, the Carnegies being large owners in all of them, and in several owning nearly all the stock.

In addition to these, the following firms will exhibit : Messrs. Jones & Laughlins, who also have the contract for all the shafting; the Nalivery, there are indications that business of the tional Tube Works, who have the contract for same kind will keep them steadily employed the steam pipe, volves and fittings for the enhereafter. Referring to the cost of locomotives, gines, boilers, etc., for Machinery Hall; W. D. Wood & Co., who exhibit their American planished ware; Lewis, Oliver & Phillips, who will display a full line of their hardware and bolts; A. Garrison & Co., rolls, housings, etc.; Hussev. Wells & Co. and Park Bros. & Co., steel; Wayne Iron Works, Brown & Co., U. S. boiler plate; Hussey, Binns & Co., shovels; Kloman, Park & Co., edge tools; Gill, car wheels.

Carnegie Bros. & Co., will exhibit a complete model of the famous Lucy Furnace, made on a scale of one-half inch to the foot, the whole being 10 by 14 feet, and showing every part of the establishment. The Keystone Bridge Company will exhibit a complete model of the great pivot draw made for spanning Raritan Bay, New Jersey. This swinging bridge or draw is the largest of its kind in the world, measuring number of merchants to the city, and a good 420 feet between abutments. The scale in this case is one-tenth of an inch, equal to one foot, and the Linville & Piper truss pattern of this present is somewhat retarded, for the reason that firm will, of course, be adhered to. In the model, engines, gearing, etc., will find miniature reproduction. These models are both very At the Centennial grounds the buildings may costly, and will form very interesting features. now be said to be finished, the only fear is Other manufacturers are quietly at work, and that the exhibitors will delay getting their not yet ready or willing to make public what

Charcoal Iron .- All reports that come to us from iron men from the North and West, and from the papers that are published in the iron interests, bring the facts that the business of producing and manufacturing iron is still on the decline. One feature in particular we cannot avoid noticing, and that is the extremely low price of cold blast charcoal irons that are intended for car wheels. A recent sale of this metal in one of the Northern cities only realized about \$26 per ton, from which, if the usual commissions, &c., are deducted, it would probably bring the price down to about \$24 to \$25. This kind of iron cannot be made for that, and when furnaces attempt to run upon this kind of iron they must eventually suspend. How far these remarks will apply to the furnaces in our district that are running upon this grade of iron we do not know. We understand from men who are interested in these furnaces that the workmen are engaged in the erection of a some of them are yet running with some profit. The very low price at which they are supplying their furnaces with ore (considerably less than one dollar per ton), and the immediate proximity of large forests of long-leaf pine enables them to furnish a supply of charcoal at a very low figure, and in this way they are enabled to

### L. COES'

## WRENCHES.



L. COES & CO., Worcester, Mass.



We invite the particular attention of the we invite the particular attention of the trade to our New Straight Bar Wrench, widened, full size of the larger part of the so called "reinforced or jeg bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view). making the jaw fully equal to any strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the gest Wrench in the market.

We would also call a tention to the fact, that in 1869 we made several important im provements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were at once closely imitated and sold as the Genuine Wrench by certain parties who seem to rely upon our improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufac-ture a superior Wrench, we wish the trade *may* not be deceived on the question of originality. Trusting the trade will fully appreciate our recent efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

"L. COES & CO."

Warehouse, 97 Chambers St., & 81 Reade Sts., N. Y. HORACE DURRIE & CO., Sole Agents.

M. H. Jones

H. JONES & CO.

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Curry Comb Mtg. Co

Northeast corner High & Friend Sts., COLUMBUS, O.



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Our Combs are made with extra heavy Trowel Shanks, every Comb WARRANTED. They are not full jewelled, do not infringe se manufacturers of new fangled ideas, beautiful in theory than in practice, but they are a co ense Curry Comb that every hostler in the country can use successfully, atthout undergoing a course of instruction as to the grasping device, These Combs are made both open and close back.



TURNED MACHINE SCREWS, One-sixteenth to five-eighths diameter.

Heads and points to sample.

IRON, STEHL and BRASS. Lyon & Fellows Mfg. Co., Cor. 1st and North 3d Streets, Williamsburgh, N. Y.



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ESTABLISHED 1852.

Manufacturers of FIRST CLASS SPRINGS AND AXLES. Also, THE

GROOT'S PATENT CROSS SPRING. USSELL TOMLINSON, Prest.
R. TOMLINSON, Sec'y and Treas. BRIDGEPORT, CONN.
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all orders promptly executed.





The Old Reliable Pioneer Poke.

BISHOP & BENEDICT, Berea, Ohio.

# Philadelphia Star Bolt Works.

"STAR"

Carriage and Tire Bolts, From the Best Brands

NORWAY IRON.



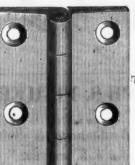
"STAR" Axle Clip.

FANCY HEAD BOLTS

Blank Bolts, Skein Bolts, Square Head Bolts, Plow Bolts, &c., &c., &c.

TOWNSEND, WILSON & HUBBARD, 2301 Cherry St., Philadelphia, Pa





# Cast Brass Butt Hinges,

BRASS RIM AND MORTISE LOCKS, lce House Hinges & Fastenings.

Manufactured and for sale by

W. & J. TIEBOUT,

Brass, Galvanized and Ship Chandlery

HARDWARE. 290 Pearl Street, New York.

### CARRIAGE BOLTS.





Clark's Patent Carriage Bolt.

MANUFACTURED BY

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Plow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, &c

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### U.S. Standard Boxwood 🖥 Ivory RULES.



III L. C. STEPHENS' PATENT COMBINATION

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Boxwood and Ivory Rules having been our specialty for over twenty years, we guarantee the uniform cellence which has always characterized our goods, Price Lists on application.



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These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, Case-Aardened hioughout, and not only combine all of the superior qualities of our cylinder or Gas Pipe Wrenches, but i'so all requisite Combinations of a regular Nut Wrench, thus making a Combination which has no equal

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Will Run [ asier, carry a Larger Load, and Wear Longer than any other Axle in the Market. all GENUINE Concord Axles are stamped with above trade mark. Manufactured only by D. ARTHUR BROWN & CO. Fisherville Concord N. H.

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Saddlery Hardware
In Gold, Silver, Nickel, Japanned, Lined, & X C. nufacturers and Patentees of various Patented tents, including Gig Trees, "Imitation Mountings," Wedge Buckles, &c., &c 



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Case-Hardened Set, Cap and Gibb Screws, Hexago Collar, and Drilled Head Screws, Agraftes and No Bolts, Special Screws, Elvets, &c., made order of Iron, Steel or Brass. Also Brass Knobs of

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Simplest, Best and Cheapest Clothes Wringer in the World.

Steel Elliptic Springs. T. J. ALEXANDER,

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R. COOK & SONS,

Carriage & Wagon AXLES, WINSTED, CONN. ESTABLISHED 1839.



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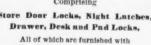
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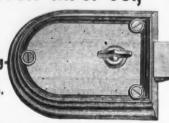


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FELTER'S

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#### SMALL, FLAT, AMERICAN STERLING METAL KEYS,

Which are stronger than steel, and cannot be affected by rist, and will remain origin and clear under all ordinary circumstances.

A randid examination will convince the most unbelieving, that for simplicity, durability, convenience, and safety, they challenge comparison with any now before the public. Being made entirely by new and expensive machinery, especially constructed to manufacture them, they will rival the best made Locks in Finish and perfect operation.

These Locks give perfect satisfaction, because they are the safest, cheapest and most durable Lock ever presented to the public, having thirty-five finely finished Brass Tumblers in each Door, and twenty-eight in each Drawer Lock, each one being finely false notched.

Each tumbler bearing on the key at two different points while locking or unlocking, without the aid of springs, which cannot be said of any other patent Tumbler Locks in use. Which are stronger than steel, and cannot be affected by rust, and will remain bright and clear under

THE LOCKS ARE FITTED TO THE KEYS And not the Keys to the Locks.

Hence Counterfeit Keys cannot be made. AMERICAN LOCK MFG. CO.,

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BLACKSMITH, Hand and Riveting Hammers.

Sledges, Swayes, Fullers, Flatters, hot and cold

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All kinds of







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Made of JESSOP'S BEST CAST STEEL, and warranted superior to any Two sizes: Large Size Boring, % to 3 inches; Small Size Boring, % to 1% inches

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Penfield Block Works,



IMPROVED Open Iron Sheaves.

A FULL LINE OF TACKLE BLOCKS.

Farmers' Blocks for Horse Hay Forks.

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This to I is particularly intended for threading stove rods rapidly and accurately, and will be useful ilso to carriage makers and in lobbing shops on rods hree-eighths and under. Also the Lightning Screw Plate. Bolt Cutters of all kinds, &c., &c.

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IXL The Woman's Friend.

The Best Finished & Most Perfect FLAT IRON ever made. NTERCHANGEABLE HANDLE and SHIELD COMBINED.



2-3 6,7 and 8 lbs. 2,9 3-3 7,8 and 9 lbs. 2 6 el Plated 12 sets or 36 irons. Send for Illus d Circuiar. Send for Illus

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# The Iron Age.

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#### CONTENTS.

First Page.—Penteld's Improved Vise. Scho-field's Patent Self-Closing Gauge Cock. Some Eng-lish Metal Work for the Centennial. The Revela-tions of the Microscope. Industrial Prospects of the South. A California Lamp for the Centennial. "Sounding Brass and Tunkling Cymbols." Roller Skates in England. A Queer Locomotive.

Third Page.—An Improved Point for Drive Fells. Manganese Bronze. Unhealthy Occupa-ons. "Ore with Steel in it." Fifth Page .- New Patents.

Nove th Page.—A Strike for Better Sanitary miditions. The National Steel Tube Cleaner. The own of England. Californis Borax. Another echanical Miracle. Iron in Monongabela County,

hirth Page.—The Late Ward Cheney. Patents in the United States. Strength of Rail Joints. Es-timation of Manganese in Cast Iron. Anthracite Coke. Port Henry Ores.

Eleventh Page.—Philadelphia Corresponditional Land Charcoal Iron Fourteenth Page.—The Iron Trade and the Tariff. Train Couplings. Patent Law Reform in England and the United States. Utilization of Coal Dust.

Fifteenth Page—The New Western Card on Iron. Meeting of the American Institute of Musing Engineers. The Future of America.

Nineteenth Page.—Business Items. Maritime Sagineering. New Railroad Communication beween New York and Philadelphia. An Old Anvis.

The new level. Page.—Destruction of a Hardwar fanufactory in Newark. Discussing Tariff with the Vays and Means Committee. A New Principle is failroad Finance, Marvelous Stove Polish. Iwenty-first Page.-Trade Report.

Twenty-Second Page.-Trade Report .- (Con

Twenty-third Page .- Our English Letter Turenty-fourth Page. Our English Letter. (Concluded). Chicago Sewage Oullets. An Extra-ordinary Electrical Phenomenon. French Engineer-ing Projects in Africa. Plating Copper and Brass. Twenty-seventh Page.-The Iron Age Direct

Thirtieth Page.—New York Wholesale Prices of Hardware and Metals

Thirty-first Page. - New York Wholesale

Thirty-fifth Page.—Philadelphia, Buffalo, Cin-unati, Pittaburgh and Detroit Hardware and Metal

Thirty-seventh Page.—Chicago, Boston, an St. Louis Hardware and Metal Prices.

### The Iron Trade and the Tariff.

On the 23d inst. Hon. Wm. D. Kelley telegraphed to Mr. Samuel J. Reeves, president of the American Iron and Steel Associa-

tion, as follows: Does the iron and steel interest assent to the rates proposed by the Morrison bill? If not, why is dissent not expressed?

To this inquiry Mr. Reeves sent the following reply:

PHILADELPHIA, March 23.

tee, and it respectfully, through you, protests against such action. If your committee would visit the iron districts of the country, it would learn for itself that manufacturers are either in the hands of the sheriff or selling iron below cost, and men who are working for \$1 a day should not be further oppressed by a legislative measure which would encourage the importation of foreign iron and still further diminish the home market. We hope the committee will allow the duties on iron and steel and all other manufactures to remain as they are until the manufactures to remain as they are until the country recovers from its present widespread

(Signed) SAMUEL J. REEVES, President. In this brief letter Mr. Reeves has touched upon those aspects of the situation which appeal most strongly to the sympathies of men who are not indifferent to the true welfare of the communities depending for prosperity upon our iron and steel industries. All that he says is true, and the picture he presents of the condition of the iron business of the country is certainly not overdrawn. But a committee which would take such a bill into serious consideration at such a time, are not likely, we think, to be influenced in their action by what they would be apt to consider sentimental considerations. We propose, in this article, to briefly present some practical reasons why the changes proposed in the Morrison tariff should not be considered-much less made-at this time

We are now experiencing a depression of industry and trade at once severe and protracted. The causes which operated to produce this depression were various. Granting, for the sake of argument, that one cause was the over-stimulation of our productive industries by the tariff; that certainly was not the chief nor only cause. Production is the basis of all prosperity, and abundance is the end and aim of all human effort; and we have yet to see a country too prosperous, or suffering from an over production of the useful products of diversified industry. Conceding, however, that our productive industries were unduly and abnormally stimulated by the tariff, such over-stimulation would not have produced the panic of 1873. The result of over production would have been a curtailment of production by the stoppage of furnaces, mills and factories not favorably situated for economy. There would have been no sudden outburst of public excitement, no run on the banks, no withdrawal of currency from circulation, no sudden collapse of vast undertakings projected with good prospects upon a basis of seemingly sound credit. The panic was the legitimate and inevitable result of a train of causes beginning with the monetization of paper currency as war measure, and characterized its progress toward the final in and disastrous culmination which it reached in 1873, by reckless speculation, a lowering of the standard of public and business morals and an over confidence in the wealth-creating power of the printing press. The tariff had nothing more to do with the panic than the free trade policy of England with the present prostration of many of the most important of British industries-and not as much. It was the result of a mistaken policy on the part of Congress in postponing the intelligent consideration of the currency question until it worked out its own solution

When the panic came, it naturally and inevitably produced a temporary industrial paralysis. Our great, expanded and until then, prosperous industries, found themselves in a position to produce far beyond the consumptive requirements of a people practicing a rigid and systematic economy. The tariff had done all that its most sanguine advocates had promised, but other causes had checked consumption and the wheels of our vast system of production were stopped. Manufacturers, who had until then been taxed to supply the requirements of the home market, were not in a position to turn their attention at once to the production of goods for export; and if they had been, the markets of the world were not, and are not now, in a condition to absorb their products. Our export trade must be built up gradually, and until we have gained a firm foot hold in foreign markets, our manufacturers must struggle on in the hope of a larger consumptive demand in the near future. This is the condition of affairs at the present time; it has been the condition of affairs in this country since the beginning of 1874, and it will continue until confidence is restored and we enter upon a period of larger and more general prosperity, resting

in the ruin of thousands, in the distrust

of the rich and the sufferings of the poor.

England, with free trade, is no better off to-

day than we should be with a sound cur-

rency based on gold.

political capital, so long will the country is understood, was urged by the Commiswait for the return of a sound and perman- sioner of Patents, and has for its object, ent prosperity. Those who seek this end to prevent examiners, clerks, etc., in the by means of what they are pleased to term Patent Office from resigning their positions problem by beginning at the wrong end and working backwards.

Now, it is obvious that at such a time

turing industries in the condition described by Mr. Reeves in his review of the iron trade, the serious discussion of a bill which proposes a radical change in our legitimate and honorable profession in whole system and theory of customs dues, cannot but postpone the revival of business for which our manufacturers have so long plains can safely be let alone. If it be an and patiently waited. The so-called Morrison bill abandons protection, and fixes the rates of duty at the figures which it is which are supposed to exist in the Patent believed will yield the largest revenue by inducing the most liberal importations. It says to the manufacturers who are standing beside their cold furnaces or amid no doubt promptly set aside as unconstitutheir idle machinery: "You have prosvastly to the wealth of the nation during the past fifteen years. Now, in the time of your trouble, we abandon you to your fate. From this time on you must the profession. stand alone; if you fall, it is your fault or your misfortune." It may be conceding too much to admit, even for the sake of argument, that the tariff has done about all that can be expected of it, as far as developing and diversifying our industries is concerned; but we can conceive of conditions under which a gradual reduction of duties could be made without danger of general or widespread disaster Such conditions do not exist at the present time, however. Before such a change can safely be begun, we should have fairly recovered from extreme prostration. The signs of the times and the teachings of history warrant the belief that the time is not far distant when such a change will be made with the consent of the people, but the country is not ready for such a change. We need a re-establishment of confidence before we can hope for a revival of industry; and an abandonment of protection would have the immediate effect of driving capital away from manufacturing investment, and rob our manufacturers of all hope of securing the financial support needed to tide them over these "hard times" of worse than unprofitable idle-

As a measure of revenue, the proposed changes in the duties on iron would be a failure. The prices of rails, bars, plg iron and nearly all items of manufactured iron and steel, are now so low that under the proposed duty it would be no more possible than now to bring them into the country. This will be seen from a comparison of our American and foreign quotations, with allowance in case of the latter for duties, commissions, freights, insurance, &c. If from any cause, such as an improved foreign demand, prices should advance in English markets, the difference in price would amount practically to a prohibition of importation. The effect. therefore, would not be to cheapen prices or increase the revenue. The market cannot now take foreign iron, as it is overburdened with accumulations of American pig, and the mills stand ready to take orders for manufactured iron at prices which forbid any general foreign competition. What, then, would be gained by such a reduction, to offset the evils which would attend it, and which are already felt as the result of its discussion? We have a vast multitude of idle workmen waiting for a revival of industry; a sharp reduction of the tariff to a revenue basis would postpone indefinitely the return of prosperity for them. Were we heartily in favor of the proposed change-which we certainly are not-we should consider the present time the most unfavorable which could be chosen. Perhaps the change in the tariff policy of the government foreshadowed by this bill, is inevitable, but every consideration of prudence should forbid it at such a time as this. We do not believe the Morrison bill will pass, and are not in the least alarmed at the action of the Committee of Ways and Means up to this point; but we deprecate the agitation of the question, and call upon all members of Congress who are not blind to the true

'tariff reform," attempt to solve the vexed and engaging in business as patent agents. These gentlemen know too much about the inside workings of the patent office, and may be a very uncomfortable class of as this, with nearly all our great manufac- persons to refuse when urging the unreasonable claims of a profitable client. But, we would ask, what right has Congress to exclude any class of citizens from any which they see fit to engage? The evil of which the Commissioner of Patents comevil it will cure itself : if not, it will have the effect of curing some of the abuses Office. Should this most unreasonable bill become a law it will, we understand, be at once tested before the Supreme Court, and tional. It would be interesting to know 'pered under protection, and have added whether the fact that certain ex-officers of the bureau are practicing patent law, accounts for the anxiety of the present commissioner to exclude all such persons from

#### Train Couplings.

destruction and theft of links and pins, is long since, attempted to make some sugleast. Few people have any conception of moral or legal. the cost to railways for links and pins, and still fewer would believe the figures if they were given. It is useless to talk changed. Chaining the pin to the draw other, and from other roads. Farmers, boys, and loafers about cities, seem to consider that the railway pin is common property and take them accordingly. It is a made of coupling pins." In the matter of draw heads, we have another point at which a great reformation must take place. A continuous draw bar is a necessity-that is, a draw bar in which the draught of the train is not thrown on any individual car. When continuous draw bars are used, the draw springs of a car are not loaded by the draught of the cars behind; consequently the train is elastic, and each car is moved by its own spring, free from any burden beside itself. Our buffing springs are not strong enough to take the strain of a heavy blow, and, in many cases, if able to sustain it without bottoming, such a blow would destroy the attachments. Some of the best roads are making progress in this direction, and will probably have a very satisfactory result to announce. Thinking men are at work upon the problem, and it is in a fair way of solution. A better method of coupling cars is one of the few actual requirements of our railway service, but inventors have commonly neglected it and devoted their attention to inventing things that are not wanted, and which are of no use when finished.

### United States

ent system of England, has long given great have shown that coal dust can be burned dissatisfaction to British inventors and successfully under ordinary boilers, withforeigners seeking British patents. As out any very costly special apparatus. The most business with the Patent Office, we even greater than could have reasonably present the following abstract of the de- been hoped for. Experiments have been mands made in a petition forwarded to the reported where coal dust has been used in House of Commons by the United Trades a blast furnace by being blown into the fur-Congress, lately convened at Glasgow. The document sets forth:

"1. That the patent laws of this country immediate and thorough reform in the auire Congress who are not blind to the true welfare of the country to protest against any discussion of the question until the country shall be more ready than now for the change which will so seriously affect so many of its great wealth-producing industries,

A very remarkable bill has lately passed the House of Representatives, which undertakes to reform an imaginary evil by unconstitutional means. The bill prohibits officers, clerks and employes of the government, who have returned to civil life, from acting as attorneys or agents against the government in matters of which the very remove a single property constitution of paying the whole of the agents' burden of paying the paying the officers and the paying the paying the to the numerous inventors and paying the whole of the patent should not cost more than ten pounds sterling, and should not cost more than t terests of the national inductry and in justice DEAR SIR: Your dispatch has been received. With one-half the furnaces and rolling mills of the country standing idle; with iron of all kinds lower in price to-day than before the war; with failure upon failure of our most experienced and respected from masters announced in the public prints from day to day; with wages of from workers necessarily reduced so low that they and their families can scarcely escape destitution and starvation, the American Iron and Steel Association is astonished to learn that a reduction of duties on foreign from is seriously contemplated by the Ways and Meaus Commit-

should simply be to report to the inventor the result of their searches, and let the applicant himself judge whether he shall take the patent, thus avoiding litigation or appeals of any kind against the finding of the examiners. 7. The notice to proceed stage should be abolished, and also the present cumbrous and unwieldly great seal. 8. The licensing of the use of patented inventions should not be compulsory except in cases where it can positively be shown that the inventor fails to supply the public demand for the patented article. 19

It is a curious-or, rather, a noteworthy fact that, while we have in this country class of reformers working to secure such changes in our patent laws as will make our system more nearly conform to that of Great Britain, public opinion in that Kingdom is beginning to demand that the British system shall be remodelled. nntil it shall more nearly resemble that of the United States. We only have in this another illustration of the truth expressed in the concluding line of a familiar couplet:

"Man never is, but always to be, blest." If the English had our system they would certainly have grave reason to find fault with it; while we are very certain that American inventors would not be willing to accept in exchange for the patents now granted them, mere certificates of record which would entitle them to establish their claims before the courts, if they could. The American system of examination, The losses to railways arising from the while it is not thorough and does not give conclusive results, and while it unquestionenormous. One of our exchanges, not ably leads to the withholding of many patents which ought to be granted, and gestions relative to the proper sizes of iron | the granting of many which ought to be defor links and pins, and the proper mode of nied, has saved inventors millions of dolattaching them. In one sense these are lars of attorneys' fees, and been instruwell enough, but the link and pin, as a mental in protecting thousands against method of coupling cars, cannot be toler- wasting time and money in elaborating ated much longer, or should not be, at inventions to which they have no claim,

#### Utilization of Coal Dust.

For twenty years inventors have been of a remedy. The system must be working at machines which should transform coal dust into blocks or lumps fit for head is of no use. Fast links prevent domestic purposes or use under boilers. stealing, but not breakage. That a car Patents innumerable have been granted should be robbed of both pins the mo- for inventions which should accomplish ment it is cut off from a train, seems to be this result, and each process seems to have inevitable, even though the pins be made a measure of success, as good blocks are fast. Train hands steal pins from each turned out which burn well and seem to be all that could be desired. But when it comes to producing them commercially, it is found that the cost is a trifle more per ton than that of the best anthracite or bitujoke among railway men that "every farmer minous coal. The enterprises struggle a along the line has a harrow with teeth little, but the facts are inexorable, and operations are suspended. The "mountains of coal dust," however, are still attractive to the imagination of sanguine and innocent inventors, and they work away at the problem as confidently as though no one had ever failed at it. The value set upon these "mountains" of dust is probably largely imaginary. Useless refuse, slate, clay and stone from the mine enter largely into their composition. "Weather waste," in the case of bituminous coal, does much toward reducing the value of these heaps, and even in the case of anthracite, the value is doubtless largely reduced by any exposure to atmospheric influences. In spite of this serious deterioration, however, the heaps do not appear to loose anything of value in the eyes of the inventors, who are yet at work at the subject.

In almost all cases the inventor's objective point is to utilize the slack or fine coal, and his endeavor an effort to put it into merchantable form. In our judgement the proper direction to take is the utilization of slack itself as slack. The experiments of Crampton at the Woolwich Arsenal, in England, developed the fact that coal dust, properly manipulated, was capable ucing a heat even more inten that obtained from the same amount of coal when burned in lumps. More recent The loose and practically valueless pat- experiments in Philadelphia and elsewhere showing the feeling among those who have success that followed these attempts was nace through the tuyres with the blast. The particulars and the measure of success attained have not as yet been fully shown, but we understand that a chill was arrested by this means when all others failed.

The cost of altering a furnace or grate bears but a small ratio to the cost of operating upon each ton of dust coal that is burned upon it. The task of the inventor, we think, is less with the fuel than with the furnace. When the latter is adapted to burn dust coal successfully there is no doubt that there will be a vast saving effected. It is even probable that, in the future, the largest part of the coal consumed will be in the form of dust instead of lumps. There does not seem, therefore, to be much encouragement for more experiments to make coal dust into blocks suitable for fuel. Even if the material for holding the dust together were obtained merely for handling, it is not at all probable that the coal dust could be handled and placed in the market at a price which would make it able to compete with coal. This, with the fact that the dust is better in its present form than made up in lumps, ought to be sufficient to induce inventors to let this side of the problem alone, and turn their attention to the more feasible one of providing dust consuming furnaces.

#### The New Western Card on Iron.

Information from a number of points in the West warrants the belief that the new card has been generally adopted, and that quotations are made to conform to it. Pittsburgh, Cleveland, Cincinnati, Chicago, Louisville and St. Louis have all published it, and are demanding and receiving the price. The volume of trade has not been very large since it was adopted, but buyers are making offers at old price and card, although we can hear of no takers. The very fact that these buyers go from mill to mill and intimate that other mills are not adhering to the card, shows that they are; because, if a merchant wants iron in the West, he will jump at the first offer that ignores the new card. We have confidence, not only that the new card will be kept, but that at the next meeting of the co-efficient given above. the Western Iron Association, April 6th, there will be a still further advance that will also be maintained. In fact, there is nothing else to do. It is not simply a question of choice, but one of necessity, that iron must be kept at the new prices, and in putting it there and keeping it there the manufacturers are only obeying the law of self-preservation.

#### Meeting of the American Institute of Mining Engineers.

(Continued.) ON THE EFFECT OF MANGANESE IN BESSEMER

METAL. \* The paper opened by referring to the wellknown fact that steel ingots often show large cracks during the first few passes through a blooming mill—a deficiency in the product, generally called "red-shortness." The different explanations for this peculiarity were given. Each works, Mr. Wendel stated, seem to select some one element as the special scapegoat for this sin of the inferior quality of the ingot. Sulphur is generally first tried as the culprit; then, after ascertaining that the sulphur is not higher in the ingot than the average, and sometimes lower in the very worst beats, silicon is abused. In case silicon fails to explain everything, resort is taken to calcium, aluminium, or some other known or unknown elements, without settling the difficulty, and at last, when the skill of the chemist has been exhausted, "practical" men denounce analytical chemistry as good for nothing. The difficulty. however, does not rest entirely with the chemist, but with a too hasty conclusion.

My object is not to discuss red-shortness, but the conditions necessary to allow Bessemer ingots to stand the strain of the two first grooves in the blooming will.

Steel will stand hammering that will roll very badly, hence the mechanical test cannot be taken as a criterion of its rolling qualities.

The conditions favorable to prevent this "want of body" are, apparently, the right proportion of carbon, silicon and phosphorus to manganese, other conditions being equal. The necessity of keeping this proportion within the proper limits seems to increase with the increased size of the lugots. From many analyses of both good and bad steel, I have come to the invariable conclusion that with steel having little phosphorus, and working satisfactori-

ly, the co-efficient Mn C+1/4 Si was larger than 0.8, and in that which worked doubtfully it was smaller. Meaning by the symbols the respective percentages of the elements as estimated by the analysis of the

This may seem arbitrary, and the too small uantity of manganese indicates that there was not a sufficient surplus present to furnish a momentum for the more complete deoxidation of the Bessemer blow-hole; but, on the contrary, the writer claims that a certain surplus of manganese must be present as a constitutional element of metal intended for blooming.

The bad influence of silicon in iron may be often explained by the fact that the heats were blown too short, and so contained, not only silicon, but, proportionably, more carbon than they should. Such irons should be blown sufficiently to remove both carbon and silicon as much as possible before recarburizing. This explains why steel from hot heats almost invariably rolls badly when blown too short.

I am inclined to believe that manganese com bines with carbon and silicon, in certain proportions, in lieu of iron, thereby changing the constitution of the metal.

The second and more important part of these considerations is the influence of phosphorus on the "want of body."

The dictum of many metallurgists, that the bad effect of sulphur is counteracted by the presence of phosphorus cannot, I am convinced, be applied to Bessemer metal rolled in a blooming mill.

Wendel cited some analyses of steel, which showed less sulphur than the average then manufactured; the quantity of manganese was more than sufficient to neutralize both carbon and silicon, and still the ingots crumbled under the rolls, and most of them had to be

\*Abstract of a paper presented by August Wendel to the Washington Meeting of the American Institute of Mining Engineers, February, 1876.

taken from the tables after a few passes. Both was the extreme limit allowed in Bessemer, and low and high heats were tried, but it was im- now 0.20 is admissible. possible to roll the ingots without disintegrating them. This steel showed only a very slight exactly like un-recarburized, or rather un-mananalysis showed.

The percentage of phosphorus, in this ina similar run of steel with phosphorus 0.20. Phosphorus of itself does not impart such pecultarities to iron, and it seemed necessary to take for granted a large affinity of phosphorus and manganese, both combining to some phosphate of manganese in the act of recarburization. The fact of the manganese percentage being unusually high rather strengthens this opinion. Smaller quantities of phosphorus, of course, could not paralyze the deoxidizing influence of manganese, but will do so, to a certain degree, as observed by me.

In order to overcome the bad influence of phosphorus in the rolling of Bessemer ingots, would suggest that the manganese in the steel should be four times as large as that of the percentage of phosphorus, in addition to the manganese quantity required for the recarburization of carbon and silicon, according to

The fact that a very bad blow is often made between two good ones was spoken of, and the reason of this explained on the above idea, and a moral drawn. If you cannot reduce your phosphorus take care to keep your manganese as high as possible.

Before attempting to utilize from with a higher percentage of phosphorus than has hitherto been done, it would be well to investigate whether the quantity of manganese necessary to insure the good rolling of the ingots does not impart too much brittleness to the product when cold, and, according to results obtained, the manganese must be kept to the required limits.

The statement of the Terre Noire authorities that one part of phosphorus imparts in the metal a hardness equal to ten parts of carbon seems to be rather preposterous. Phosphorus cannot be substituted for carbon, but the manganese combined with phosphorus renders the metal hard and stiff, similarly as carbon would do. This is the reason phosphorus steel with little carbon is hard, but it would be simply cold-short with an insufficient quantity of manganese. In the first place the metal is a phosphorus manganese steel; in the second, a carbon manganes: steel with phosphorus.

Prof. Raymond :

In reference to Terre Noire and the alleged manufacture of rails with as high phosphorus as 0.35 and 0.12 and 0.13 carbon with 0.75 to that means was turned to for the purpose of 1.00 of manganese, I can say from information I have that this is actually done. The facts at Terre Noire cannot be disputed. Our presi- it is more severe on the steel than the hammer. dent can speak more definitely on this point than I can.

The president, Mr. A. L. Holley:

I think Prof. Raymond misunderstands Prof. Wendel's paper, and his reference to Terre Noire. He does not deny the fact that rails have been made with these high per cents. of phosphorus, but states it as his opinion that the hardness is due to manganese, not to phosphorus. Indeed, I am able to say from conversation with Prof. Wendel that he accepts entirely the fact. The question is as to the cause of the hardness.

Prof. Silliman :

There is a very interesting question connected with this, and that is, as to the nature and extent of the gases absorbed by the Bessemer metal in the blow. This is becoming more im portant, in view of the analysis of Dr. Wright on the gases occluded in meteoric iron. So far as I am aware no careful analysis of, or experiments on the gases occluded in metals have been made.

Prof. J. Lawrence Smith thought that we should look upon the results produced, by the substances associated with the iron in Bessemer steel, as not altogether of a purely chem ical character; but they performed some funcduring the of the steel, which ceased with the operation : and, furthermore, that the gaseous associates of melted iron (gases of occlusion, so-called), were probably affected in some way by the manganese. It is a well-known fact that gases do occlude themselves in some unaccountable way in metals when fused, especially in the pure metals. The occlusion in the case of silver is well known, which gives rise to that curious projection of metal at the moment of consolidation, looking like a metallic vegetation. Melted copper, also, holds gases which manifest themselves in the porosity of copper castings. In both of these cases the presence of foreign metal seems to prevent this. A little copper with the silver will prevent the vegetation, and a little aluminum or zine will prevent it in the case of copper.

The Professor alluded, incidentally, to certain curious results recently obtained by him in relation to volatile hydro-carbons in the graphitic nodules of meteoric irons, that must have been in a state of fusion at the time. These compounds are soluble in ether and sulphide of carbon and possess a peculiar odor. Some of the investigations on this subject, it was stated, had been completed and would soon be published. Some reference was made to phosphorus in iron. He said that we were bound to master it in one of two ways, or, perhaps, in both, viz. : Allow it to remain, and correct it by some neutralizing material or eliminate entirely. He alluded to the fact that five years ago he predicted that the effect of phosphorus would be overcome. At that time 0.05 of phosphorus Mining Engineers,

Mr. Robert W. Hunt, Troy, said that as he understood Dr. Wendel's paper, the gentlemen reaction, if any, in the vessel on recarburiza- who have discussed it seemed to have lost sight tion, and looked, when poured into the molds, of its most important point, which was the claim that phosphorus, to a certain extent, ganized metal. The only explanation for this paralyzed the deoxydizing power of manganese strange behavior might be that the spiegel used at the time of the recarburization of the charge on this occasion contained little or no man- in the vessel. It was true, as bad been asserted, ganese. That this was not the case subsequent that this was a theory, but to the speaker's knowledge it was one based on years of observation and investigation, and seemed to him stance, was excessive, but I afterward observed fully sustained by many experiences of his own. Dr. Wendel admits that his formula may need modification; but let that be as it may, by following it the Troy Works had no trouble in obtaining satisfactory and unvarying results. And here permit him to say that the Association must not suppose the analyses quoted to represent the steel usually made at Troy. On the contrary, he was not prepared to enthusiastically enter the ranks of those makers who were using highly phosphorized irons, but the com pany he had the honor to represent preferred to try and keep the phosphorus in their steel under one-tenth of 1 per cent. Then they knew they were safe, and felt satisfied their rails would continue to sustain the high reputation to which they were proud to refer. He would not say that highly phosphorized irons could not be used in the Bessemer process by the aid of ferro-manganese, but thought that province most likely belonged to the open hearth process.

He knew Dr. Wendel did not intend to doubt the results obtained at Terre Noire, but only doubted the bardness being given to the steel by phosphorus. He thought manganese was the more likely element. This seemed to be sustained by a recent experiment of the speaker. A short time ago he made some steel having '25 per cent. of carbon, less than '10 per cent. phosphorus, and about 1:12 per cent manganese, expecting to have a very soft steel It was nice, wild working steel and quite ductile, but to his surprise it tempered so hard that a butcher knife was made from it which was in daily use. Now, carbon was not present in sufficient quantity; phosphorus was also low then from what did this bardness come if not from the manganese?

Quite an interesting fact connected with the tendency of steel to crack in the first passes of the blooming rolls, was, as no doubt the president, Mr. Holley, would remember, that in 1867, when the ingots made by the Pennsylvania Steel Company, at Harrisburg, were being hammered and rolled into rails at Johnstown by the Cambria Company, in whose service the speaker was at that time, the lamented George Fritz and Mr. Holley originated the idea of roll ing them in box grooves, all of us thinking it would be easier on the steel than hammering The ingots were working very badly, and in the then knowledge of the Bessemer business solving the dilemma. The present blooming mill is the result, but instead of it being easier, Therefore the speaker thought railroads ought to much prefer rails made from rolled blooms to those from hammered ones. For as Dr Wendel had said, it was possible to make stee work under the hammer which would no stand the strain of the blooming train. For this reason the speaker had long ago ceased placing any reliance on the mechanical tests of the test ingots in reference to the sound working of the steel, for often these would work satisfactory, while the large ingots would roll very badly when they came to be bloomed And this unreliability of hammered tests had caused serious losses to several works, where large quantities of ingots had been produced before their mills were ready to roll them.

Referring to the steel mentioned by Mr Pearse as having been made by him at the Penn sylvania Steel Works, he would ask if it had given satisfaction in use. Upon Mr. Pearse saying he could only say the Pennsylvania Railroad had it in their tracks, Mr. Hunt said he would not be willing to risk his reputation as a steel maker by guaranteeing any such rails. He did not believe they were safe, and did believe that if the facts were known they had not

given good results.

Prof. Eggleston: per cent., and a small amount of cobalt? It is never been made continuous. the greatest metallurgical curiosity I have ever seen. It is the only steel I ever heard of with that amount of impurities.

Mr. Pearse :

It was tested with the usual test-1 ton dropped 23 feet, the rail supported in three places-but we did not look for nickel. were satisfied with what we did get.

Prof. Eggleston:

Can pieces of the steel be had for further ex amination, as it will be of the utmost importance that all the facts regarding it should be known? The United States Board will have time and facilities to do this, or, as it is so strange, I would do it myself.

I think there are some pieces which I can send you.

NOTES UPON THE MANUFACTURE OF FERRO-MAN

The paper relates to the details of the method by which a superior article of ferro-manganese is produced in the Austro-Hungarian empire. At Reschitza and probably at Laibach also, ferro-manganese is made in a blast furnace, with charcosl as a fuel and lime as a flux. The ore is a ferruginous mixture, containing about 37 per cent, of sesqui-oxide of manganese. The following is the analysis:

\*Abstract of a paper read by Wm. P. Blake at the Washington meeting of the American Institute of

Silica SiO. Protoxide of iron. esqui-oxide of iron..... esqui-oxide of mang'nese CaO MgO HO Magnesia. Water....

3.691 This requires a large amount of limestone. The larger the quantity of limestone, or the more higly basic the charge is made, the larger the percentage of manganese in the product. Fifteen per cent, of lime and 85 per cent, of ore gave a product with 25 per cent. of manganese. Doubling the amount of limes added 5 per cent. of manganese to the product; trebling gives say 35 per cent. of manganese

To recapitulate

15. Limestone | gives 25 per cent. of manganese. 28'6 Limestone 71'4 Manganese ore { gives 29 per cent. of manganese. 43. Limestone | gives 35 per cent. of manganese.

In a trial of the ore, of which an analysis is given, 43 per cent. of limestone was added. This made a highly basic charge, but upon this

depends the success of the operation and the ercentage of manganese obtained. The blast also must be under high pressure and be very hot. In making the ferro-manganese at Reschitza the pressure equaled 90 to 100 millimeters quicksilver, and the heat was carried to 250° Cent. the highest point attainable with the heating apparatus. With a hotter blast and still more limestone an alloy containing at least 50 per cent. of manganese could be produced.

The quantity of ore, fuel and flux required to produce 50 kilogrammes (100 pounds) of ferromanganese, and the cost of this product at Res-

	Florins.
1,400 Kilogrammes of ore	2'94
5 Hectoliters of charcoal	2.00
600 Kilogrammes of limestone	
Labor, etc	1.00
Total	6.15
This is about conjugated to these	

ound, or say \$60 a ton.

The abundance of manganiferous ores in this ountry leads us to expect the production of a supply for our home demand, but the cheap German spiegel, afforded at a constantly diminishing price, interferes with the development of this industry. The imports from Germany amount to from 20,000 to 30,000 tons per year; the price for 40 per cent. manganese, \$35, gold. The demestic production does not exceed 7000 tons, and increasing. The estimated consumption is 25,000 tons in Bessemer works.

A description of the manufacture of spiegel at the New Jersey Zinc Works, together with annual production and analysis of the mixture

was given.	The analy	ysis is as i	follows:
Iron			82-250 83-23
Manganese			11.586 11.67
Phosphorus			
Silicon			0.367 0.99
Carbon			4.632 4.02
The Wood	stock Iro	on Co., at	Anniston, Ala.,
			ore containing a

little over 20 per cent. of metallic manganese and no phosphorus, mixed with lump ore containing 58.28 of iron, 8.56 of manganese and 1.042 phosphorus; but these percentages are Four analyses of the product show

variable. Four analyses o	r me b	Todace	BHOM .
Iron	85·98	80·37	78.86
	4·83	4·94	4.32
	0·88	0·38	0.93
Sulphur	0·17	0·18	0·197
	6·14	14·13	20·69

Mr. Ward, of Cartersville, Ga., is also making about 3 tons a day in a blast furnace with charcoal, using brown hematite and manganese

During the last six months Mr. W. P. Ward, of Cartersville, Ga., has been making experiments, the ultimate object of which was the manufacture of ferro-manganese in the blast furnace. In the absence of proper data on the subject in the authorities on metallurgy, Mr. Ward has, of course, encountered many difficulties, but he has at last succeeded in producing an alloy containing 60 per cent. and more manganese. This industry may now be considred as well established in this country.

Prof. Eggleston: I had an opportunity while in Europe of exmining into the manufacture of ferro-manganese, and I presume at some of the same point to be noticed in connection with the man-The blast fureven and must be changed to ordinary iron and ears and prevent a fall.

gradually worked back to the ferro-manganese. Prof. Raymond:

There is one fact mentioned by Mr. Ward, in the paper read by Mr. Eilers, as an element of his success that should be especially noted, and formed—on copper pipes employed for convey-that is the alumina in the charge. As to the ing illuminating gas. Such accidents have reeconomy of the blast furnace, as compared with the reverberatory, in spite of the difficulties attending the working in the former, I think that it will be found more economical. The blast furnace is already crowding the reverberatory. We shall soon hear less and less, and finally not at all, of the patented processes in that the works at Terre Noire, finding the yond their capacity to supply, have quietly bought up this Freach spiegel and shipped to this country in some instances, so that we have at first formed, dissolves to a dark blue solubeen using these blast furnace ferro-manganeses without knowing it. These French

I understood that Mr. Ward increased the amount of manganese in the charge. Did he increase the proportion of manganese, or did he use a greater burden?

Mr. Eilers:

He increased the proportion of manganese ore. Mr. Firmstone:

That is as I thought, but I wanted the point eleared beyond a doubt. In making ferromanganese it is necessary: 1st. To have a furnace run very gray; and 2d, have a very basic cinder.

#### The Future of America.

The Iron and Coal Trades Review, in a digest of Mr. Hepworth Dixon's new book, "The White Conquest," thus disposes of the future of the United States. It is well to know the worst, and now that we have learned what is to become of us, we can await our fate with becom ing resignation :

People generally think there is an American

school system as in England, that American children are all at school, and that American children are all well taught. Yet, out of a population of about 40,000,000, including all the various races, statistics show that the native Americans, who cannot read and write, amount to nearly 5,000,000. There is no general school system, no compulsory attendance. America has been peopled chiefly from the western countries of Europe; but the question arises, Are all these races being now fused into one grand nationality? Statistics go to disprove this. The birth rate is declining in America from year to year in every State, and that decline is constant and universal. The rate is admitted to be larger among the immigrants than among the natives, yet the average thus increased by strangers is lower than that of any country in Europe. Some of the ablest statists and physicians of Boston have come to the conclusion that the white race cannot live on the American soil. They seem to think that the black race will populate the Southern States, that the yellow men from China will gradually obtain possession of the North. Certain it is that the immigration from China is now on a most extensive scale, and the Mongolians are getting a firmer hold year by year, whilst the influx from Britain and Germany is falling off, and is likely to decrease year by year. The conclusion to which Mr. Dixon would lead us is that the population of the States is not likely to be consolidated into a powerful race, but that the native Americans are not maintaining their ground. Should these views prove to be well founded, it would seem that the era of American supremacy must be so remote that we, in our day, need not trouble ourselves very much about it. As Mr. Dixon's statements do not appear to have been called in question, we cannot but assume that he has not unfairly represented the condition of things now prevailing.

The Patent Office Gazette probably contains as nuch mirth-provoking matter as any government document in the world. Among the many funny things in the last issue we notice a plan for preventing cars from leaving the track or dropping down when a truck breaks. The plan, in detail, is to have a set of rollers, or very wide wheels, along the top edge of the car. Under these rollers, upon each side, are two lines of rails nearly as high as the eaves of the car, and almost touching the wheels mentioned. In case the wheels under the car jumped the rails, the rollers catch upon the elevated rails or tracks and hold the cars up. A modification of the device is shown, in which hooks are made to take hold of the upper track. Taking this plan in all its details, we do not think that a road equipped in this way would cost more than twice as much as an ordinary road. Taken for all in all, it is about as absurdly senseless as any plan could be. The elevated tracks could not be used at the very points on the main line where the greatest danger is frequently met, namely, at frogs and switches. The light and the view of the ountry would both be obstructed, and above all, the heavy timber work necessary to support these rails would be objections. If the plan is applied to an elevated road, the same objecworks which Prof. Blake visited. There is one tions exist. It is a marked example of an invention to meet an imaginary want. Probably Was that steel with the large percentage of copper tested? and did you look for nickel, as it should be there to the extent of half of 1 cessis continuous, while in the latter it has the papers, without any idea of their real causes. A parallel invention to this would be nace will run six or seven days on a homogeneous product, and then it will begin to work unman's foot slipped they would catch under his

> The explosive character of acetylene copper is well-known. Many serious accidents bave occurred from its presence-spontaneously suited from slight blows with a bammer or some other iron tool given by workmen when engaged in making repairs, etc. According to the Polytechnisches Notizblatt, another copper compound has recently been prepared, which, when mixed with chlorate of potash, forms an explosive, which it is proposed to use for fillreverberatory furnaces. A large quantity of ing percussion caps, torpedoes, etc. The mode ferro-manganese is already made in France in of producing this compound or saits of copper the blast furnace, and I have reason to believe is as follows: To a solution of sulphate of copper is added enough hyposulphite of soda, orders for this material pressing upon them be- in solution, entirely to destroy the blue color. To another portion of the blue vitriol solution, ammonia is added, until the blue precipitate, tion. The two solutions are now mixed; and been using these blast furnace ferro-manganeses without knowing it. These French spiegels can be had to as high as 40 per cent. manganese guaranteed.
>
> Mr. Frank Firmstone:
>
> There are two points that need to be cleared up: 1st. As it is desirable to have a highly basic cinder, it is necessary to know the amount of lime in the highest charge; and 2d

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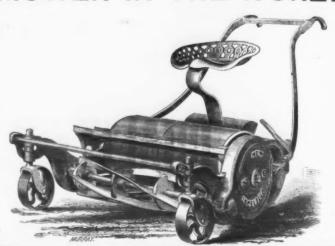
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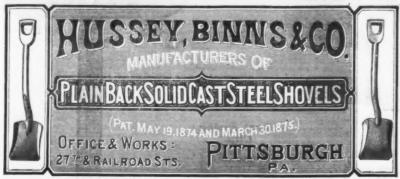
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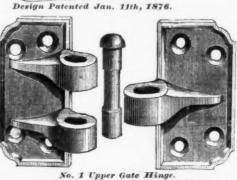
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#### BUSINESS ITEMS.

NEW JERSEY.

One of the three large blast furnaces of the Andover Iron Company (Jos. C. Kent, Esq., superintendent), at Phillipsburg, Warren county, has been put in blast, which makes four of the fourteen in New Jersey using anthracite coal now in blast, viz., the above, two at Oxford, and one at Port Oram, A. Pardee, Esq., lessee. It is quite likely one or two others will be blown in early this spring, as the stock of pig iron on hand, with the exception of that at Port Oram, is fast diminishing. Mr. Pardee has about 11,000 tons piled up there, and is apparently not disposed to sell unless at a profit. There are considerable amounts of ore being mined and sent out of the State to Pennsylvania, much of which is used for producing Bessemer pig iron. The wages of labor, both at the mines and at the works that are running, may be said to have reached "hard pan," and the indications now are favorable for quite a revival of the mining interests of New Jersey before many weeks pass.

During the recent gale of wind the stock house of the Hackettstown Furnace was blown down and perfectly demolished, involving a loss of probably about \$2000.

The Crane Iron Company, notwithstanding the bad state of the roads, are moving from 50 to 60 tons daily of their Kishpaugh ore to the railroad for transportation to their furnaces at Catasauqua, Pa., to use for Bessemer pig.

Messrs. Cooper & Hewitt's mine, on the Bar-ton farm, near Oxford, is developing finely, and they are mining a large quantity with a small force of men. This ore is shipped to their new furnace at Durham, Pa., which was recently blown in. The analysis of the ore shows its adaptation for Bessemer purposes.

The Bethlehem Iron and Steel Company have been taking out a large amount of manganic ores at their mines near Oxford during the past year, and shipping to their furnaces in Pennsyl-

vania. The mill at Camden has been idle since 1873, and is for sale. It has 40 nail machines and 3 trains of rolls, 7 double puddling furnaces and 4 heating. A company is negotiating to buy, and if terms are made it will start up in May.

NEW YORK. The Bailey Wringing Machine Co., 106 Chambers street, have just received an order from England for American meat and vegetable choppers, amounting to \$2000, net. The same house have also received an order from Germany direct for over \$300 worth of "Defiance" metallic

MASSACHUSETTS.

The Griffin Machine Company, at Westfield, will exhibit at the Centennial a full line of their Burrell & Bates clutch.

Easthampton's show at the Centennial will not be large, but good. The most prominent and perfect specimens of their manufacture. They will probably be shipped this week.

The Athol Machine Works have been running full time, manufacturing meat choppers, meat presses, and Simpson's adjustable parallel vises.

Q. S. Backus, Winchendon, after two years of experimenting, claims to have discovered a preventive for rust, to be used upon iron and steel. Mr. Backus is driving his bit and brace manufactory up to its full capacity, with orders ahead for his specialties.

The Massachusetts Screw Company, of Holvoke, in order to fill a large contract for screws for the Centennial building, are having 14 new machines, made to be put in at once.

CONNECTICUT.

The Derby Silver Company, of Derby, have taken an unusually large order for goods, which will employ the whole capacity of their works for the next 60 days. The order is for 30,400 sets silver plated forks and spoons. The company manufacture silver plated and brass goods and cutlery.

The New London Northern Railroad began, April 1, to lay new steel rails between Norwich and New London. They have just contracted for 1200 tops of rails.

One of the oldest manufacturers of stoves and tinware in New Haven is Sherman R. Warner, having been engaged in the business 31 years. He employs from 10 to 15 bands, and is at present getting up a fit-out of stoves, cooking utensils, &c., for a mission at Osaka, Japan. He has also recently shipped goods to France.

Large quantities of Kennedy's barbs and barbed wire for fences are manufactured by the Doolittle Manufacturing Company, of Bridgeport, who are doing an extensive business in this line, at present employing, in all departments, 60 hands. They make a variety of light metallic goods, such as tidy fastenings, button-hole lancets, &c., and also Earle's hose bands, which are easily adjusted, and stand the greatest pressure that can be brought to bear on them. Beside these specialties, they have facilities for galvanizing and working up sheet metal into any desired shape. Their factory is very large, covering half an acre of ground, and is fitted with all the most improved appli-

The largest steam boiler in Connecticut made by H. B. Beach & Sow, of Hartford, for Austin Dunham & Co., has just been placed in their factory at Windsor Locks. The boiler is 6 feet in diameter, 84 feet in length, and weighs 15 tons. It had to be raised outside of the building to the hight of 35 feet, which was quite a hezardous undertaking.

The Farist Steel Company, of Windsor Locks, commenced running on full time last week, having been idle since January 1.

The Barnum-Richardson Company, of Lime Rock, are having constructed a show case in which to exhibit specimens of their manufactures at the Centennial. It is to be 15 feet square and 18 feet high, and made of hard oods and plate glass. It is to be highly orna-

mented and lettered. In it will be placed car qualities of iron made by them.

The Farrell Foundry and Machine Company, of Ansonia, have shipped for the Centennial and 19 coke holes. one of the largest size Blake stone crushers.

The Higganum Mfg. Co. are melting 6 tons of iron per day to fill their orders for castings wrought iron anvil. for agricultural implements, beside shipping large quantities of finished work in the same line to various parts of the world.

PENNSYLVANIA.

Rieble Bros. have sold two of their testing machines to go to the West. They say they intend to have a testing machine at the Centennial, and will test metals by compression, torsion and tensile strains. Tests are to be made daily. The machine is to be large size.

All the Philadelphia mills are running. The Woods Mills, at Conshohocken, are all on double turn.

The Morristown Rolling Mills are idle. At Sharon, the Keel Ridge, one of the Stewart, and both of the Westerman furnaces are in. One Stewart and the Sharon are out. The Westerman will be banked as soon as stock is

In the Shenango Valley the following furnaces are in blast: 1 Keel Ridge, 2 Westerman, 1 Stewart, 1 Ormsby, 1 Spearman, 1 Douglass, 1 Sharpsville, 1 Mt. Hickory, Wampum, 1 Neshannock, 1 Ætna, 1 Rosena; total, 12. The rest are out, viz.: 1 Allen, 1 Clara, 1 Douglass, 1 Ætna, 1 Fannie, 1 Middleex, 1 Mt. Hickory, 2 Shenango, 1 Sophia, 1 Little Pet, 1 Spearman, 1 Stewart, 4 Wheatland; total, 17.

The Harrisburgh Telegraph is informed that a new mill for the manufacture of Bessemer steel is to be built at Baldwin this season.

The Juniata Iron Works, in Porter township, Huntingdon county, Pa., have ceased operations on account of the abandonment of the Pennsylvania Canal west of Petersburg Dam, p ortion of the line by the company. The works were erected in 1837 by S. & B. R. Hatfield, and have ever since been in successful operation.

Anthony Struble, Esq., assignee of the Middlesex Rolling Mill Company, offers the 7th, 1876.

The Advertiser says the damage resulting from the late fire at Sharpsville Furnace will operation Saturday, 18th, when the furnace resumed work:

The Beaver Times says that A. L. Crawford, Esq., of New Castle, and W. L. Scott, Esq., of Erie, are supposed to be the capitalists who are to put up the contemplated furnaces and rolling mills, at Clinton, Beaver county. The project for its speedy commencement is regarded as very good by citizens of Homewood.

The Derrick wants a glass factory at Oil

Rockville Bridge, five miles west of Harrisburg (the longest wooden structure on the Pennsylvania Railroad), will be entirely replaced with a substantial iron structure the

coming summer. The firm of E. Haldeman & Co., Chickies Furnace, which has been in existence for 34 years, has been succeeded by the Chickies

The manufacturing interests of Columbia will be represented at the Centennial by the Supplee Steam Engine Co. They have already shipped to their Philadelphia office an engine for exhibition.

situated at Salina Station, West Pennsylvania ing now 36 to 38 tous per day. This was origi-Railroad, are running full, turning out 4000 No. 1 nine inch bricks per day, beside a large amount of tile of different shapes, all of which are manufactured from a first quality of fire clay. The demand for them is so great that tuyeres using a mixture of Lake Superior at present they are out of bricks.

Wednesday the new engine of the Bechtelsville Iron Company's furnace was put into operation for the first time. Its movement was regular, smooth, and gave satisfaction.

The new mill, at Glasgow, in the first week of its operations, which was last week, turned out 41 tons of finished iron. It was the talk among the employes yesterday that an addition of 40 feet would be erected to the building, and that there was a possibility of a "double turn'

being run after April 1st. The Lemont Furnace has stopped for a few weeks in order to get limestone to supply it. The Baldwin Locomotive Works, Philadelphia, are now building two engines for the

Pennsylvania Railroad Company to be placed on exhibition at the Centennial-a class I and a class C. The draughts were made in Altoona. and the engines would have been constructed there, also, but from the fact that the shops are already filled with new work.

The Philadelphia and Reading Railway Compary is now preparing four 10 wheel coal engines for use as passenger engines during the altered for the same purpose. Water tanks will be placed on top of the foot boards, and each engine will also be supplied with the Westinghouse brake. These engines will be used principally for drawing excursion trains over "Summit" at Fairmount Park.

PITTSBURGH AND VICINITY. Sligo Forge has again resumed operations. been for repairs.

Painter's is rulning double turn. The Pittsburgh Steel Casting Company have

would not work economically for all castings. wheels and other manufactures of the company, It was a 5 ton furnace, and while it was well and also specimens of the various ores and adapted for very large castings, it was not so satisfactory for light ones. The plant of this company is now ten 24 pot Siemens furnaces

B. W. Baldwin have all they can do with their

The Revolving Scraper Company, of Colum bus, manufacturers of scrapers, wheelbarrows and plows for railroad building, have lately made large additions to their buildings and inand 50 ft, wide has been completed and five additional dry kilns erected. Extensive additions have also been made to the shops, and new st eam heating apparatus put in in all the work ing rooms. To keep up with the largely increasing demand for their goods, the factory has been running over-time continuously since January. They are now able to turn out 100 complete scrapers and wheelbarrows per day. Orders from all parts of the United States and Canada, and also from abroad, keep coming in, and the company have work enough ahead to keep them busy for the entire season.

The Dover Fire Brick Works are being put in thorough repair, and work will be commenced about April 1. A large number of orders are waiting to be filled.

The purchasers of the Columbus Glass Works, sold at Sheriff's sale, were W. B. Brooks, John L. Gill, George W. Gill, Richard Jones, Winson Acheson, P. V. N. Myers and Henry E. Gill. The propriety of starting the works in a few days is under consideration, with a fair pros pect of action.

Howard and Buckhorn are still pursuing the plan to change to stone coal by putting in new hearths. The Lawrence Furnace Company expects to be ready for a blast on native coal in a and the destruction of all locks, etc., on that few weeks. The furnace is to have a fire brick hearth. We hear that Washington Furnace is contemplating the same change, the company having an abundance of the Clinton coal.-Ironton Journal.

Scioto Furnace is building a new pot house. entire property for sale on Friday, April She will make a blast of not less than eight or nine months the coming season,-Portsmouth

The Belfont Furnace will possibly resume reach \$10,000. The insurance, amounting to blast about April 1. The Belfont Nail Mill, \$6000, has been allowed. The machinery was having accumulated stock, has shut down for a suffici ently repaired to permit its being put in short time. We notice some fine specimens of coke made from the celebrated Sheridan coal, at the office of H. Campbell & Sons .- Ironton Commercial.

Two of the four blast furnaces at Cleveland are in blast. These are the furnaces of the Cleveland Rolling Mill Co., which are making Bessemer pig. The Proton Furnace, of the will be the seven pumps of the Valley Machine is causing considerable excitement in that Cleveland Iron Co., is being relined, and the Company, which are of extremely line finish section of the Beaver Valley, and the prospect Emma, of the Union Iron Works Co. banked up.

> All the rolling mills at Cleveland, except the Standard, are in full operation

The Cleveland Rolling Mill Company have oegun the manufacture of Bessemer horse shoes, under Hale's patent. Their first regular work was done on Thursday last, turning out with their single machine 18 kegs.

At Niles, the Niles Iron Works and the old Ward Mill are idle. The Falcon and Russia are running. The latter, as we have already announced, has an order for 1200 tons of sheet. Both of the blast furnaces are out.

Three of the five Youngstown furnaces are m blast, two of the Himrod being out.

The Benwood Furnace, at Martin's Ferry, changed its tuyeres last week from 31/4 inches to 41/2 inches, with a marked improvement both in The "Salina" Fire Brick Works, of Kier Bros., the quantity and quality of the iron made, maknally a 43x121/4 furnace, but was altered last year to 53x121/2 and blown in Jan. 21. It is blown by one vertical engine, 28x60 steam cylinder, and 72x60 blast cylinder, through four specular, Iron Mountain and mill einder and Connellsville coke. All of the iron made is used by the owners at their Benwood nail factory

All the manufactories at Warren are in operation except the furnace

But little mining is being done in the Mahon ing Valley, the price of labor being in dispute At Brier Hill one of the Grace furnaces is in ; the other was torn down at the beginning of the panic, and has never been rebuilt. The Eagle is in and the old Brier Hill out.

The blast furnaces at Columbus are both idle. Both the Jefferson, the Steubenville, and one of the Mingo furnaces are in at Steu benville.

The Ætna Furnace, at Ironton, has made large sales of iron lately. Fifty thousand harrow teeth were turned out last week at the McNairy & Classen Works,

Cleveland, for the Illion, N. Y., Harrow Company. Manning & Sons, Cleveland, have cost four of the six cylinders for the new water works tunnel, under the first contract, and have re-

ceived orders for two more; they are building Centennial, and probably a dozen more will be a hoisting engine for the Glasgow Iron and Coal Company at Port Washington. Of the Cleveland Rolling Mill Company's

Works we note the following: The guide mill is running on rods for the wire mills. Upward of 60 tons of rods were turned out in one day last week. The old rod mill started up on Wednesday. Two hundred tons of wire were The puddlers at Graff, Bennett & Co's, will digging of the foundation for the new wire esume Monday, April 3d. The stoppage has mill commenced on Friday morning, the 17th inst .- Review.

An exchange says: The Glasgow Iron and Coal Company, Port Washington, Tuscarawas

run double turn. They have over 8000 tons of pumps, is thrown up through pipes to the deck, pig metal piled up in their yards.

ALABAMA.

One of the Red Mountain Furnaces has blown first week 175 tons. This is large work for a With clean sand, an increase of 20 per cent. come up to its work very gradually.

TENNESSEE,

Marion county, and especially in Jasper, over at Battle Creek. Mr. Bowron, the representative of the company, which has its headquarthe farm of Woods Wilson, and proposes to railroad and river. They are now having a surmiles above that village, to open the company's coal lands. Things are very lively in Marion just now.

Messrs. Her & Cahill, proprietors of the new Chestnut street Foundry, Chattanooga, are meeting with far better success than they anticipated. They have four molders at work, and have orders for all they can do. They will put in a crane for handling heavy castings next week-having several heavy orders on hand. As soon as the patterns are furnished they will commence making several approved styles of ornamental cast fencing.

Mr. Thomas Webster has accepted an offer from the Southern States Coal, Land and Mining Company to superintend the erection of machine shops, engines and machinery for their blast furnace at Battle Creek. This company is fortunate in securing the services of so competent a mechanic and thorough gentleman .-Chattanooga Commercial.

ILLINOIS.

The Belleville Naıl Works will be sold April 10th. We learn that they have sold all the nails they had on hand at the time of stoppage very much below the present low rates.

The Bessemer department of the North Chicago Rolling Mill is making 15 heats a turn.
The rail mill makes 5 heats a turn.

MISSOURI. The Vulcan Iron Works, St. Louis, are at present in a state of transition. The rolling mills—iron and steel—whenever circumstances may require their combined production, will be may require their combined production, will be able to equal the production of the foremost mill in the United States. Two of the furnaces are dried and can go into blast under very short notice. The capital of the Vulcan Iron Works Company is \$2,000,000. Twelve hundred workmen are employed, which number will be enlarged considerably when every branch of operation is going. The average of compensation to bands is \$2.25 per day, requiring about \$300,000 when irregularly run, as the unpropitions time and low prices compelled it to be. The Bessemer works are steadily progressing. The early summer will inaugurate active operations in the mills and furnaces, at least in tions in the mills and furnaces, at least in part.—Mines, Metals and Arts.

INDIANA.

The trustees of the Ohio Falls Car and Locomotive Company, of Jeffersonville, have decided to sell out that institution on the 10th of June, to satisfy its creditors. It is rumored that a company is being organized, headed by W. C. Depaw, of New Albany, who are to purchase the works and continue the manufacture of cars. the manufacture of cars. The Brazil Furnace has been in blast ten

months. GEORGIA.

The engine house of the Rising Fawn Iron Company was demolished by the wind last Sunday night. Their narrow-gauge engine, which was in the building, was somewhat demograd by falling timbers. damaged by falling timbers WYOMING.

WYOMING.

The boiler of the Union Pacific R. R. Co.'s rolling mill, at Laramic City, exploded on the morning of March 22d, with terrible force, completely wrecking the south half of the mill. Four men were instantly slilled and ten others wounded seriously. The explosion occurred after the night hands had gone home, and before the morning hands came in, so that less than 20 men were in the mill at the time, nearly every one of whom were either killed or wounded. The boiler was carried through the stone wall of the mill and out a quarter of a mile on the prairie.

PACIFIC STATES.

PACIFIC STATES.

PACIFIC STATES.

The total yield of the Consolidated Virginia Mine for the month of February is \$2,800,000—a yield unprecedented in the history of mining, but one which will doubtless be surpassed next

rs for the Central Pacific Two new postal cars for the Central Pacific Railroad, with all the modern improvements and conveniencies, have just been turned out of the railroad shops at Sacramento.

There are 1066 manufactories of iron, gold, silver breast its ware, lumber, leather, for brief, and the second state of the second state

silver, brass, tit.ware, lumber, leather, fabrics dry goode, liquors, groceries, animal products, etc., in San Francisco, that pay \$27,012,881 for raw material, have \$31,333,781 invested capital, employ 9713 white men, 2697 women and 1485 children and 10,813 Chinese.

### Maritime Engineering.

A new plan of dredging river and harbor bottoms has been proposed, which commends itself to the notice of engineers. In removing soft mud and silt from sea and

river bottoms a notably interesting device has recently been exhibited. The plan is to use a steam tug or barge of large size and titted with on in life, proud of their father, and happy to powerful engines, both for its propulsion and the movement of its dredging machinery. Just and civilization." abaft the center of the boat, four holes are made in the bottom, and to these are fitted iron pipes, having flexible joints, so as to hang freely below the keel. These are joined together by a framework, and, by means of a crane at the stern, they may be raised or lowered at will. Each pipe terminates in a bent shoe, having openings at the sides. When at shipped from the wire mills last week. The work they rest lightly in the mud at the bottom, and, being flexible, readily adjust themselves to the changing depth caused by the waves, the tide or the shoaling of the water. Through these pipes is sucked up, by the natural pressure caused by the displacement of taken out their open hearth furnace and are county, are running their extensive works the boat, the loose mud and sand to be reputting in in its place a 24 pot Siemens. The double turn. This is the first time we have difficulty with the open hearth was that it heard it intimated that a blast furnace could taken out their open hearth furnace and are county, are running their extensive works the boat, the loose mud and sand to be re-

and thence outboard into barges alongside. Fitted with such tubes, each 10 mehes in diameter, such a boat, it is estimated, will lift and in on coke, making the first day 13 tons and the discharge 32,000 yards of silt in ten hours. 60x12 furnace, but whether it is good for the over this is estimated. The plan also presents present force to fill orders for their Lockweld furnace is questionable. The best practice is another interesting feature in a machine for not to push the furnace at first, but to let it tearing up and loosening hard packed silt, and preparing it for the suction tubes. This consists of an iron fork or harrow, revolving on The following Chattanooga news is of inter- its own axis, and supported on a framework, est: There is considerable excitement in lowered by chains from the bow. By this means it is kept at any required angle, and, by creased their capacity for the manufacture of their specialties. A new warehouse 350 ft. long southern States Coal, Iron and Land Company, and thus tear and rip up the bottom just in advance of the pipes. When at work the boat is designed to be advanced, by means of a line ters at Stockton-on-Tees, England, has bought of secured moorings and leaving a path on the bottom of varying depth, according to the charput up a furnace and build a wharf between the acter of the material. Each pipe sucks up a wide area about its mouth, and, in case of choking or vey of an extension of the Jasper branch, 16 stoppage, may be instantly cleared by raising the pipes from the bottom and allowing the clear water to sweep through. When not in use the harrow and pipes may be raised to the keel, and the boat then moved to another spot. This new dredging machine has been made the subject of exhaustive experiment, with satisfactory results.

> New Railroad Communication Between New York and Philadelphia .-The new railroad between this city and Philadelphia is finished. As the first effect of the new work, we have already a reduction of fare. This new work will, it is said, connect with the Richmond branch of the Reading Railroad, and run cars through from Jersey City to the Centennial grounds, where the Reading Company will erect a station. The New York end is the New Jersey Central, whose depot at Jersey City will be used, and the Philadelphia end is the North Pennsylvania, whose depot on Berks street will be used. The immediate result of this work will be to open up to the manufactures and trade of Philadelphia a rich region of country traversed by the New Jersey Central and the Bound Brook Railroad lines, and already in communication with New York. It is a matter of regret that the passenger station should be so far from the center of the city, but in that respect it is like all the other lines. At the present time the work is purely a local road, though ultimately it may become a connection of other through lines between the South and West and New York. This line renders possible and probable a host of other railroad connections in central and northern Jersey for which the North Pennsylvania Railroad will become the trunk, and many of these could have been made before had not the completion of the line been so much opposed.

> An Old Anvil .- Mr. Norman Seymour, ecretary of the Livingston county (N. Y.) Historical Society, writes to the Courant as fol-

> Mt. Morris, N. Y., March 13, 1876. Among the relics that have been brought out so far this centennial year I have found in our town an old anvil weighing from 80 to 100 pounds, marked on it in figures cut in the iron, "1632." This anvil was brought over from England about the year 1632 by John Moses, who settled in Dorchester, near Boston. In 1667 he moved to Simsbury, Hartford county, Conn. He had a son Timothy, and Timothy second had a son Elisha, and Elisha second came into the Genessee Valley, New York, at an early day and brought the anvil with him. He died at Mount Morris in 1847, aged 86 years. This rare curio-ity of the olden time is now in the possession of the family of the late Elisha Moses, but it should have a place in your cabinet of Puritan relies, the Athenæum. I also had the pleasure of looking at a Connecticut

Courant (No. 1191) published in 1787 by Hud-

son & Goodwin.

The man who made an international fame in carrying the project of the Suez Canal to a successful completion, Baron de Lesseps, is pleasantly gossiped about by a correspondent as follows: Though 70 years old, he is still a young man, and contemplates grand designs which, it is to be hoped, he will live to carry out. With black eyebrows and mustache, but white beard. he is a most noticeable man, and those who do not know him take him to be a sergeant in the gardes. He brings his children up in the most Spartan-or shall I say Egyptian ?-way. They go about barefooted, and, although Madame only half likes this, he is able to boast that their young ones, of whom they have a small regiment, are never ill. His house is full of gifts from great persons. There is a gold cup given by the Empress worth \$40,000. All the sovereigns present or represented at the opening of the canal sent him ribbons, making him one of the most decorated men in Europe. He now desires to make a railway through the Euphrates Valley. He says: "I do not care for riches, and I have no wants; all I wish is that my children may grow up and prosper. I satisfy myself with the hope that they will get continue his work, which is that of humanity

The Woodward Steam Pump Manufacturing Company, of No. 81 Center street, which made an assignment two weeks ago to Wm. T. Francis, has submitted a proposition to the creditors for a compromise. The offer is to pay in fullten per cent. cash and the balance in two, three, four and five years' time. The creditors have appointed a committee, of which Mr. Moore is chairman, to examine the affairs of the company and report at a meeting to be held in the course of a week. The compaceived an extension from its creditors ago, and now it is unable to meet its indebted

Destruction of a Hardware Manufactory in Newark.

On Monday afternoon the works of Henry Sauerbier's Sons, No. 34, 36 and 38 Mechanic street, Newark, N. J., were destroyed by the explosion of a steam boiler under one of the works. The buildings were opposite the ruins of the Celluloid works, destroyed by an explosion a few months ago. Sauerbier's factory comprised four buildings, three being altered dwellings fronting on Mechanic street, and the fourth an extension behind these, extending to the wall of the cemetery, belonging to the church in Broad street. Harness ornaments and iron work, shoemakers' tools, and many kinds of cutlery were manufactured in the factory, and 45 men were employed. At the time of the accident these men were employed as usual, in various parts of the factory, and Henry Sauerbier and his sons, Henry, Jr., and Theedore, were in the front office and the packing room adjoining. In the boiler room, under the rear of No. 36 Mechanic street, Louis Desch, the engineer, and several blacksmiths, whose forges were built alongside the boiler, were following their avocation. Suddeply a crash was heard, and almost in the same instant the buildings were lifted up and thrown back in their places in a total wreck. Steam and dust and splinters of wood and metal enveloped the block. The fire bells were struck and three steamers and two hook and ladder trucks arrived at the scene in a few minutes. For nearly ten minutes clouds of escaping steam obscured the factory and intimidated the firemen. Through the steam workmen rushed franctically into the street, their bodies covered with dust and their clothing torn, and in some cases their hands and faces burned. Henry Sauerbier, the father of the proprietors of the factory, was among the first to escape. The sons followed soon afterward. All were too bewildered to speak. Every man, as soon as he escaped, ran wildly from the building through the crowd that was gathering and along the streets, many of them going straight

When the wind had carried the last of the steam and dust away the front of the building was seen to be cracked and broken, and the rear, where many of the firemen had already begun to work, was a heaped up mire. The right hand walls of 34 and 36 had fallen, and the rear wall of 36 was leaning far out of its perpendicular. Under this latter building, where the boiler had been, the right leg of a human body was seen protruding through the debris, a man was seen further in toward Mechanic street, and the groans of a third person were distinctly heard. Nearly the entire interior of 36 and 38 bad fallen, the floor timbers having given away in the center, leaving the interior like a funnel, with machinery, bricks and lumber filling it half way up. Under one side of this funnel the bodies lay all within ten feet of the dangerous rear wall. A few brave firemen volunteered to enter and rescue those within. The heat there was intense, and until water was thrown upon the bricks, work inside was greatly hindered. The body belonging to the upraised leg was found to be that of Christian Sobel, a blacksmith, who had been employed in the factory nearly nineteen years. From over the portion of the boiler that remained in its place, pinned down by heavy joists and hot bricks, George Denner, another blacksmith, was rescued. His legs were crushed and his body frightfully scalded. Jacob Kaulpe, a temperer, was next removed. He had been buried nearly out of sight, and was at first supposed to be dead. The fourth person held in this seething furnace was Louis Desch, the engineer, who was also scalded and bruised, but less seriously than the others. From the upper windows of the other buildings a number of frightened workmen, none of them seriously injuried, were taken by the firemen. Considering the time and character of the explosion, it is a wonder the casualties were not more serious. Only one man was killed outright, and probably not more than five others were seriously hurt.

Discussing Tariff with the Ways and Means Committee, on Tuesday, th metal and metal manufacturing interests were well represented. The copper and yellow metal interests were represented by Mr. Crapo, of Massachusetts; Mr. Heine, a metal broker of New York; Mr. George A. Pope, of the Baltimore Copper Smelting Works; Mr. Samuel Mendelbaum, of Detroit, and Mr. Horatio Bigelow, of Boston; the objection to the proposed tariff was principally on the ground that it allowed the importation of copper ore free of duty. Mr. M. J. Woodruff, of New York, and Mr. Edwin G. Angell, president of the American Screw Company, of Providence, favored an increase of the proposed duty on the smaller sizes of screws. Mr. G. W. Bruce, a New York importer of hardwere, argued against any increase. Mr. C. L. Alexander, representing the Roebling Wire Cable Manufactory, of Trenton, N. J., argued against the proposed reduction of duty on that article, stating that even under the existing tariff his firm had been underbid by an English firm for the cable for the New York and Brooklyn bridge.

A New Principle in Railroad Finance. -An English railway journal condemns the proposed reduction of 25 per cent. in passenger rates to Philadelphia, during the Centennial era, as "wrong in principle and unsuccessful in practice." It thinks that the increase of the demand for traveling facilities, which will occur during that period, should lead rather to an increase than a reduction, on the principle that "when the demand for a thing is greatest the price should rather rise than fall." The idea is novel and startling. It could, we think, be applied to best advantage in fixing the subscription price of the journal in question. If the price were increased in proportion to the number of new subscribers gained, we should have a very neat and conclusive example of its work-

Marvelous Stove Polish .- A Western firm advertise in a Western journal something startling in the stove polish line. We quote as follows: "The only thing for saving labor and expense. The article was formerly known as the Russian stove enamel, manufactured from the best Chinese carbon of iron, rendered malleable by burning at a temperature of 290° Fahrenheit, which renders the carbon fast burn ing, at the same time saves all trouble of rubbing to obtain pollsh, as the heat forms the enamel, or gloss; the only thing known to be lasting upon a stove." "Chinese carbon of lasting upon a stove." is good; still better when "rendered malleable by burning at a temperature of 290°

A set of wheels were lately taken from be neath the baggage car of the California and Oregon express train at Sacramento, which had traveled in daily use 91,800 miles, and they were not worn out then, but had become loose on the axle. A few weeks ago a set was taken from beneath the same car that had traveled about 80,000 miles, and there are yet remaining under the car two more sets, put in use at the same time as those mentioned above, and yet so little worn that they probably will not have to be removed for months. The wheels were cast at the railroad foundry in Sacramento.

The Consolidated Virginia Mining Co., Nev., recently shipped 107 bars of bullion, weighing over six tons and valued at \$378,232 55. This is the largest single shipment ever made by any company on the Comstock lode. The Belcher company once made a shipment of \$335,000. The work of melting and assaying the large amount of bullion mentioned above was commenced on Monday morning and finished on Tuesday morning by 11 o'clock, there also being made during the time 140 ore assays. This is undoubtedly the biggest work ever done in the way of melting and assaying silver bullion.

### Special Notices.

OTIS T. BEDELL'S

Patent Rapid Transit Screw Wrench New strongest, best. Is one-third stronger (weight and material being equal) than any screw wrench in market. Is instantaneously adjustable, operates very easy, will not spring in the back, will not bind on the screw, no back pressure on the handle, very durable, costs no more than others. The American and Foreign Patents for sale or to lease on royalty of less than one per cent. Address

OTIS T. HEDELLI, S3 Reade St., N. Y.

Care ELY & WRAY. EF See cut—Vol. 17, No. 12, p. 9.

### SPECIAL NOTICE.

Baving established ourselves in business in this ity for the sale of

### American Hardware, House Furnishing Goods, Agricultural Implements, etc.,

we beg to solicit correspondence with parties desirous of being represented by us in Germany and surrounding countries.

HAMMACHER & DELIUS. HAMBUEG, Germany, April, 1876.

### INTER-STATE Industrial Exposition, CHICAGO, 1876.

A GRAND EXHIBITION FOR THE

CENTENNIAL YEAR. Enlarged and Improved in all respects.

All Manufacturers, Artisans and Inventors will consult their own best interests by making a special Means Committee .- At the session of the effort in 1876 to bring their products before the

abroad who will certainly attend. Will open September 6th, 1876. Applications received at any time.

For Blanks and further information, apply to JOHN P. REYNOLDS, Secretary.

### Partner Wanted.

In large Iron Property. Charcoal Furnace and Forge Works leased for \$12,000 per annum, quarterly payments. Room for other works. Make best quality metal. Address

P. O. Box 863, Baltimore, Md.

### To Manufacturers and Patentees.

Wanted useful patented articles for manufacture, suitable for sale by hardware deders. Cash will be paid for patents or advance made for royalty.

P. P. PRATT, Care PRATT & CO., Buffalo. N. Y.

WANTED.—A first-class business man familiar with machinery and manufacturing, capable of handling large bodies of men, desires a responsible position. References satisfactory. Address, IRON AND STEEL, Care of P. O. Box 813, Bridgeport, Conn.

### DROP FORGINGS.

The TRENTON VISE & TOOL WORKS, Trenton, J., having increased their facilities, are now able to do all kinds of

Iron and Steel Drop Forgings n quantities to order at reasonable rates.

HERMANN BOKER & CO . Proprietors 101 & 103 Duane St., N. Y.

### Special Notices. WANTED TO EXCHANGE

at cash prices, real estate for 30 to 35 lb. T Railroad Iron, new, or first-class second-hand. Sufficient to lay 10 miles of track. Address,

P. V. HITE, Tarentum,

Allegheny Co., Pa.

### Centennial Card

THE

Parties who intend to exhibit at the Centennial.

### Indestructible Mirror Card

The Handsomest and most attractive medium for introducing goods known. They will never be laid A Light, Handsome Office. aside. Send for price to

W. F. HYATT. Successor to HICKOX MFG. CO.,

280 Pearl Street, NEW YORK

### Important to the Hardware Trade.

ADMINISTRATOR'S SALE. By order of

EDWARD PHELAN, Esq., Administrator OF THE ESTATE OF W. F. SHATTUCK & CO.

### BISSELL, WELLES & MILLET,

day, April 11th, at 10% a. m., at

113 Chambers and 95 Reade Streets, The entire stock of W. F. SHATTUCK & CO., to close the Estate; comprising in part, Coes' & Taft's Pattern Wrenches, Augers and Auger Bits. Gimlet and Gimlet Bits, Platform, Counter and Union Scales, Axes, Picks, Hatchets, &c. Also, Axe, Pick, Sledge and Hammer Handles, Yaws' Cow Bells, Hammers and Sledges, Maguire's Wrought Iron goods, Tackle Blocks, Carriage Spokes, &c.

Terms of Sale, CASH. Catalogues ready on Saturday, April 8, at our office BISSELL, WELLES & MILLET, 15 Murray St , N. Y

WANTED situation as foreman in a mechanical establishment, by a man 28 years of age. Is a college graduate, has served a three years' apprenticeship at machinists' trade, and for past two years has been assistant draughtsman in water works construction. References as to ability and character. Address, F. M. C., P. O. Box 268, Rochester, N. Y.

SITUATION WANTED.—By a thoroughly Operatical man, to build or manage blast furnaces or an iron foundry. His plans for blast furnaces embrace the best modern improvements. Good references. Address IRON, Cartersville, Ga.

### For Sale.

The Patent of R. H. Hasenritter's Portable Show Case,

escribed and illustrated in the January 1, 1876, issue of the Scientific American, in the whole or in R. H. HASENRITTER, Herman, Mo.

CENTENNIAL EXHIBITION.—The un-CENTENNIAL EXHIBITION.—The undersigned, a German, having been engaged by Messrs. Stemens Brothers, of London, England, the great Cable Manufacturers, to represent their interests at the coming Centennial Exposition—which will occupy but a small portion of his time—would be pleased to arrange with some other firms to represent their interests at the same time for this occasion. Terms reasonable. Refers to Messrs. W. B. Bement & Son, of Philadelphia, where he was formerly engaged. Please address

R. BORCHERS, Mech. Engineer, 656 N. 12th st., Philadelphia.

#### The Champlain and Fssex MINING CO.

GEO. G. SAMSON, President,
Box 90, New York P. O.
LEWIS H. BOE, Supt. and Manager,
Port Henry. N. Y. Offer For Saie for shipment on and after 15th day of May, Magnetic Iron Ore from their mines.

Analysis Made by J. Blodget Britton shows:

Analysis Made by J. Divaget British she	JW8:
ure Metallic Iron	7.48
xygen with the Iron	1.90
Vater	'48
nsoluble silicious matter (white sand)1	5.19
oluble Silica	*43
alphar	.02
bosphorie Acid—Phosphorus 42	
-Oxygen '54	.96
	.78
ame	
fagnesia	*68
xide of Manganese, undetermined matter	
and loss	49-100

### CENTENNIAL EXHIBITION.

A young man, a native of this city, with good ref erences, having had large experience in the Hard ware Trade, offers his services in receiving, arrang-ing and keeping goods in order during the exhibi-tion. Terms moderate. Address, JOSEPH K. PARKER,

461 North 2nd Street, Philadelphia.

### VENTILATING & STEAM HEATING,

A thoroughly competent engineer, with extensive experience in the above line, desires employment. Address Office of The Iron Age, 10 Warren St., N. Y

# **Business Opportunities**

New Capital Procured, Partnerships Arranged, and Commercial, Mining and Banking Corporations Organized, by
CLARKE, CHITTY & CLARKE,

Board of Trade Offices, New York. P. O. BOX, 4071.

#### A. PURVES & SON, Corner South & Penn Streets, Phila.,

scrap Iron & Metals, Machinery, Tools, Shafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Babbit Metals, Foundry Facings. Best Quality Ingot Brass.
Cash paid for silkinds of Metals and Tools.

#### HARDWARE SPECIALTIES Manufactured to order on favorable terms

POWER AND ROOM to Rent by the CORRUGATED METAL CO., East Beilin. Ct

#### Special Notices.

### SPECIAL NOTICE.

I have three patents for Dies, Machiner, and Tools for making Augers and Bits, each running seventeen years; dated as fellows: Dec. 19, 1865; January 31, 1866, and July 3, 1866. There is a special cleim on each of the Dies. All persons infinging on said patents will be held responsible to the extent of the law. Russell Jeunings.

DEEP RIVER, Conn., Sept. 7, 1874.

### WANTED TO PURCHASE, 100 tons good Second-Hand T Rails, 18 or 20 lbs. per yard.

Address, giving particulars,
PIPER & THOMPSON,

### TO LET,

Possession Immediately. HERMANN BOKER & CO., 101 Duane Street. N. Y.

#### MANUFACTURERS

desirous of introducing their goods to the British and Continental Markets, are advised to insert advertisements in the newspaper "IRON," pub lished every Saturday, at 99 Cannon Street, London, E. C.

SCALE: First 3 lines, 3/; every additional line, 10d Price, 6d. per Copy, or 30, per annum, inclusive of oostage to the United States

### HALL & HARBESON,

Chemical & Physical Instruments, 191 Greenwich Street, N. Y.

SPECIALTY.—BUNBER'S CAS BURNERS, for all heating purposes, BUNSER'S IMPROVED CAS COMMUNT. SEE THE BRASS AND METAL WORK made to order for Metallurgists, Chemists, Experimenters, Colleges. &c.

# Steel Castings.

CHESTER STEEL CASTINGS CO.,

#### Evelina St., Philadelphia, Pa. Wanted-A Partner.

In a foundry and machine business, already well es tablished. Locality splendid and healthy. A practical man with means is wanted to join practical man who is already well established. CAR WHEEL FOUNDRY, P. O. Box 134, Selma, Alabama

### Briesen's Patent Agency FOR SECURING INVENTIONS, TRADE

MARKS, &c., IN AMERICA AND EUROPE.

No. 258 Broadway, New York. A. V. BRIESEN.

### NOTICE! POND'S TOOLS

The undersigned has assumed the Personal Property, including accounts, finished and unfinished Machinery, good will &c., connected with the manufacture of Machiners's Tools as conducted by Mr. Lucius W. Pond since 1847, and will continue the said business at the old stand, cor. Union and Exchange Sts., Worcester, Mass., under the name of DAYID W. POND, Successor to Lucius W. Pond. CARD.—Having assumed the business mentioned above, I solicit Inquiry and Patronage, with guarantee that present standard of Workmanship, and quality of Machinery shall be maintained. A large quantity of New AND SECS, How Tools, ALL STYLES AND SIZES, For Sale at Low Prices. Send for list of second-hand tools. Store at 98 Liberty St., New York, will be discontinued from Feb. 1, 1876, and all sales made from manufactory. Respectfully,

DAVID W. POND,

### DISSOLUTION OF COPARTNERSHIP

The firm of McClernan & Hymes is this day dissolved by mutual consent. The business of the firm will be liquidated by M. McClernan alone, No. 130 Liberty Street.

NEW YORK, Jan. 20, 1876.

M. McCLERNAN,
D. HYMES.

### Special Notice. JUST ISSUED.—Seed & Agricultural Implement Catalogue.

200 Illustrations and Price List mailed on receipt f 10c.

A. B. COHU,

197 Water Street, N. Y.

### DISCOUNT LISTS. GUNS & SHEET ZINC.

Hinges § Stanley Works' I.st. . . 10 % to 50 % cach, Esc. and Butts, { Union Mfg Co.'s. . . . . 10 % to 60 % " 75c. Boit. File and Hinge and Butt List.—Contains all the lists and discounts that are used. . . . . . . Price \$1.00 Dayton & Lamberson, 97 Chambers St. N. Y

Worcester Free Institute. APPRENTICE CLASS.

Enter January 29. Address, Prof. C. O. THOMPSON,

Worcester, Mass.

### for Bale, &c. HARDWARE BUSINESS For Sale.

In the city of Norwich, Conn, an old stand facing two streets. Rents low. Good help and doing a prosperous business. Large back country. The best of reasons given for selling. Address. FULLER & PARISH, Norwich, Conn.

### Hardware Business For Sale.

One of two stores, one at Watertown, Mass., in care of my son, one in the city of Newton, Mass. Either store is well established and remarkably well situated for trade, having been established some 18 or 20 years, and under my own care. The growth of this trade is sufficient recommendation for any party wishing to establish themselves in trade.

Apply to Alfred Hovees, Newton, Mass. Or George E. Hovees, Watertown, Mass.

### FOR SALE.

An % inch mill train for making Merchant, Band

and Hoop Iron. Will be sold cheap. Apply to W. W. JONES,

Near the Lehigh Valley Railroad Depot, Allentown, Pa.

### For Sale.

### FOR SALE, at Taunton, Mass.

The Steam Engine Works known as the Foundry and Machine Co., consisting of all the Real Estate, Machinery, Tools and Patterns necessary for building Corliss Steam Engines, from 10 inch to 34 inch cytinder; also a full stock of Tools and Machinery for general job work. This property with be soid extremely low, either for the Machinery, Tools and Patterns to be removed, or the entire property. The city of Taunton offers superior advantages as a location for any kind of machine busness, having a navagable river for receiving coal and fron. Two lines of railroad connected by steamers between New York and Boston; superior Western connection by railroad, and a large and intelligent manufacturing population. For further particulars or catalogue of machinery address

GEORGE A. FIELD, Taunton, Mass.
Or J. M. LEONARD, Somerset, Mass.

### COPPER ROLLING MILL FOR SALE.

I offer for sale the Rolling Mill of the Honghton Copper Works, situated at Houghton, L. S., Mich.; and about 2 acres of land on which it is located, the machinery, tools, appurtenances and dock connected therewith. Also all the corporate rights and franchises of the company, and good will and trade already established. For price, terms of sale or other information, address, M. VAN ORDEN, Agent, Houghton Copper Works, Houghton, L. S., Mich.

#### For Sale.

A long established

### Wholesale Hardware Business.

controlling specialties. A good chance for party with moderate capital. Satisfactory reasons given for selling. Address V, 290 Pearl St., N. Y.

AT FURNACE SITE.

#### On the 23d Mar. 1876, at 12 o'clock, Noon. FOR SALE at Public Auction

The Napanock Blast Furnace Property. Ine Napanock Blast Furnace Property.

Description of the furnace is about as follows; Hight of stack 46 feet high, and 12 feet bosh, bulk of stone to top of bosh, thence up of brick banded with heavy iron; lining is of fire brick. 30 inches thick, Hearth and boen are of fire brick. 30 inches thick, Hearth and boen are of fire brick. Tunnel head is 6 feet diameter. Hot blast was erected by Mr. McHose, of Reading, Pa.; is first-class, almost new. The power is of water, said to be of double the capacity; one of the best water powers in the State. Wheel is overshot, 36 feet diameter 636 feet face. Capacity of furnace 30 tons Authracite iron or 15 tons of charcoal iron, Woodland is abundant, from \$3 to \$6 per acre, for many years. Ores by railroad or by Delaware and Hudson Canal, which passes Napanock, which is a thriving pluc, two miles from Ellenville, Ulster Co., New York.

For further particulars, apply at furnace or of H. BANGE,

94 Gold Street, New York City.

### FOR SALE.

TESTING MACHINE, built by the Son a Boston Iron Co., arranged for tensile and com-pressive strains, capacity 150 tons.

MILLING MACHINE, built by Brainard Milling Machine Co., cutters swing 28 inches diameter, and spindle set at right angles, which insures accurate work

insures accurate work

IRON ROOF, that coveren New England Iron
Co.'s Mill, 8 arches 80 feet span, posts 18 feet
high, building now 80 feet wide by 90 feet long.

ROLLING TABLE, for straightening Iron.

PUDDLE TRAIN, for Ballets and 3, 4 and 6
inch Pars.

inch Bars.
FIVE DRILLS.
CORRUGATING MACHINE, Complete.
CORRUGATED SHEET IRON and barbed SMALL UPRIGHT ENGINE, 15 H. P.,

PUMPS, Etc. Apply to WM. E. COFFIN & Co., 8 Oliver Street, Boston.

HARDWARE STORE, FOR SALE. Is one of two stores situated in a city of seven thousand inhabitants, three railroads, fine country surrounding. Best of reasons for selling. For fur-ther information, address, KING & SON,

### Lima, Allen Co., Ohio. BLACK WALNUT

For Sale Cheap. Large quantities of pieces of plank suitable for turn-ing and sawing into any article requiring such wood.

Perfectly Dry and Sound.

#### PROVIDENCE TOOL CO., Providence, R. I.

FOR SALE.
Hardware, Tin and Stove business, in one of the best towns in Michigan. Can be bought on easy

terms. Address, Box 168,
South Bay City, Mich. FOR SALE.

### At Lowest Manufacturers' Rates.

Best German and Belgian Brands, By LOUIS WINDMULLER & ROELKER, 90 Reade Street, N. Y.

### For Sale, Stove and Tin Business.

Will sell, on good terms, one of the best arranged House Furnishing Stores in Canada West, at St. Thomas. The premises are roomy, the buildings having been arranged especially for this trade, with Tinsmith's workshops and benches complete for is men.

### Present Stock about \$6000.

St. Thomas is the head quarters of the Canadian Southern Railway Co. To a practical, energetic man this offers unusual advantages. Business well established and with good connection. Rosson for disposal, present proprietors increasing their wholesale and retail Hardware Store next door to the above premises. Address

HORSMAN & HORSMAN, Iron and Hardware Merchants, St. Thomas, Canada West.



at 10c. a copy, Weekly Spanish Review and Prices Current. The madersigned is also a Translator from and into the English, Spanish, Translations made: for the governments of Germany and Spain, Pacific Wall S. S. Co, Walter A. Wood: Morris, Wheeler & Co.; Todd & Rafferty; John T. Dunkin; Fisk & Hatch: R. W. Winhe; Wilson Sewing Machine Co.; J. Hess & Co.; H. Marquardt; M. Echeveria & Co. and Chas, E. Little, New York: Hocking Valley Mfg. Co.; W. F. Potts, Son & Co. Phila; Atlantic and Pacific Land Co.; B. E. Flemming, Jersey City; Wilder & Co., Savannah, and the Tanite Co.; Stroudsburg "Emery Grinder"), Abendroth & Rood Mfg. Co., to whom he refers.

127 Estimates furnished of translations and setting up of Spanish, German and French Catalogues for the Centuck Co. KathCHHOPF,

Metal Reporter of "The Iron Age,"

Bux 8091, New York P. O.

# Trade Report.

Office of The Iron Age. Wednesday Evening, March 29, 1876. The past week has been devoid of much general interest, so far as movements in the various financial markets are concerned. In fact, Wall street is just now extremely dull, with prices heavy and speculation at a minimum. Money continues abundant and easy to obtain on good collateral, but lenders have advanced their rates a little, and borrowers on call have paid various percentages, varying from 8 to 6 per cent, with 4 @ 41/2 per cent. as the ruling rates. The rates on prime mercantile paper is 5 @ 6 per cent.

The gold market has been heavy, with a downward tendency, due to the fact that the banks now hold a large coin reserve and that shipments of coin are just now light. The following table shows the Southwest, says daily range of the gold premium since our

														1	1	1	g	hest.		Lowest
Thursday		٠									0							11436		1143
Friday							0		0		0	0	0	0		0		11436		1143
Saturday .				0		0	0	0								٠		114%		114
Monday															0	a		114		1187
Tuesday		 		٠	۰									0				11436		1183
Wednesda	y		0			۵.				 0.0							. ,	.114%		1133
0																			-	allaht da

Government bonds have suffered a slight decline during the week in sympathy with gold, but subsequently recovered firmness. Railroad mortgages are dull, but fairly steady, and investment shares generally are dull. We give below the quotations of Governments at the close of business to-day.

The stock market was dull and heavy, and a break in railroad stocks was imminent on account of the prevalence of a rumor that the trunk lines were about to cut rates and go into another "war." The principal dealings, mostly small, have been in Lake Shore, Pacific Mail. Erie, Western Union, Northwest and St. Paul. We give below the quotations of active shares at the close of business to-day:

The bank statement is chiefly interesting as showing that the usual outflow of currency to \$2.75, net; small lots are quoted at \$2.80 to the Middle and Eastern States preceding the \$2.85, according to quantity and brand. 1st of April is in progress. Comparing the averages for the week with those of last week, & Haines, agents, have placed on the market it appears that the total reserve has fallen a new article of Hardware, which should have \$2,699,600, but making allowance for the de- a large sale. It is a Metal Flag Holder, which crease in liabilities, the surplus reserve is down only \$1,098,770; this surplus reserve is now It will hold the flag staff at a desirable angle. \$11,732,506. The following is a comparison of These goods are made for various sized poles, the averages for the past two weeks:

March 18.	March 25.	Differences.
Loans \$263,866,700	\$261,154,000	Dec. \$2,612,700
Specie 22,369 400	21,504,000	Dec., 865,400
Legal tend's. 45,603,100	43,773,900	Dec. 1,834,200
Deposits 220,584,900	241,181,600	Dec 6,408,300
Circulation. 16,483,300	16,199,700	Dec 283,600

The movements in foreign trade for the week are shown in the following tables:

#### IMPORTS.

were articles valued as follows:

1874. Total for week \$12,431,936 Prev. reported 88,112,651	1875. \$7,197,099 82,004,677	1876. \$5,610,589 74,187,632
Since Jan. 1\$100,544,587	\$89,131,706	\$79,798,214
Among the imports of	general m	erchandise

Quant. Value.

Anvils	190	\$1,714
Brass goods	16	2,784
Bronzes	8	1,200
Chains and anchors	86	3,204
Cutlery		19,833
Guns	70	8,936
Hardware	20	2,733
Iron, pig, tons	51.8	12,204
Iron, cotton ties	199	784
from other tone	181	4.035
fron, other, tons	1 800	10,360
Lead, pigs	1,000	
Metal goods	96	18,150
Nails		770
Needles		5,348
Platina		8,825
Per. caps	1	247
Saddlery	4	374
Steel	657	11,854
Silverware	2	318
Tin, boxes	20,494	121,837
Tin, 1096 slabs	112,000	20,934
Wire	7	2,174

#### EXPORTS, EXCLUSIVE OF SPECIE. For the week ended March 25:

Total for week Prev. reported	1874. \$6,047,968 62,914,982	1875. \$4,170,096 58,885,021	1876. \$4,449,173 55,621,776
Since Jan. 1	\$68,962,950	\$58,007,090	\$60,070,949
E:	XPORTS OF	SPECIE.	
For the week	ended Mar	rch 25:	

<b>Fotal</b>	since	Ji	nn.	1,	1	8	N	1.			 0								 \$	1	,16	7,2	19
Same	time	in	187	15.										٠						З,	998	5,85	17
same	time	in	187	74.																1	.13	5,8	18
Same	ume	in	18	78															 		655	1,85	M
Same	time	in	18	72													0				56	0,8	X
Gos	verb	me	nt.	h	a	m	a	a	ı É	ŧ1	4	0	1	n	a	ρ	w	P	'n		an	nte	d

Bid.	Asked.
U. S. Currency 6s	1963
U. S. 6s 1881, reg 19136	12136
U. S. 6s. 1881. cou	122%
U. S. 5-20 1865, reg 11834	118%
U. S. 5-20 1865, cou	118%
U. S. 5-20 1865. new reg	119
U. S. 5-90 1865, cou	119
U. S. 5-90 1867, reg	12134
U. S. 5-20 1807, con	19134
U. S. 5-90 1868, reg	128%
U. S. 5-90 1868, cou	1283
U. S. 10-40 reg11734	118
U. S. 10-40 cou 118%	119%
U. S. 5s, 1881, reg	11836
U. S. 5e, 1881, cou	118%
The following were the prices of	active

U. S. 5e, 1881, con	118%
The following were the prices of	active
shares at the close of business to-day:	
Atlantic & Pacific R. R. Preferred 4 Atlantic and Pacific Telegraph 1856 Chicago & Northwestern	Asked. 434 1936

U. S. 10-40 cou	1193 1183 1185
The following were the prices of	activ
shares at the close of business to-day:	1183 1183 of active
Bid.	
Atlantic & Pacific R. R. Preferred 4	434
Atlantic and Pacific Telegraph 1816	193
Chicago & Northwestern 41%	
" Pref 62%	623
Chicago, Rock Island and Pacific 110%	110%
Ohic., Bur. & Quincy118	1183
Col., Chic. & Ind. Cent 4%	
Clev., Col., Cin. & Ind's 55	
Cleveland and Pittsburgh 96	965
Chicago & Alton104	
" Pref11036	
Consolidation Coal	
Canton 8734	
Del. Lack, and Western	
Delaware & Hudson Canal	
Adams Express 107%	1083
American Express 62	625
United States Express 70%	
Wells, Fargo & Co. Express 86%	
Erie 1936	195
*Harlem13934	
Hannibal & St. Joseph	173 973

7311- C4-03	1003
Illinois Central	
Kansas Pacific	18
Kansas & Texas 11%	123
Lake Shore 61	613
Michigan Central 61%	613
Morris & Essex 105%	1063
Milwaukee & St. Paul 49	423
" Pref 68	683
Mariposa 8	11
" Pref 816	11
New York Central	1184
New Jersey Central107	1073
New Jersey Southern 1%	13
	90
Ohio & Miesissippi	213
Pacific Mail	135
Panama130	
Pittsburgh & Fort Wayne 102%	1023
Pacific of Missouri 14%	15
Quicksilver	18
" Pref 23	94
St. Louis and Iron Mountain 21%	223
St. L., Kan, City Northern 6%	73
" Pref 81%	815
Tol., Wabash & Western 3%	4
Union Pacific 62%	63
Western Union Telegraph 67%	66
* Ex dividend.	-
MA ULTIMONU.	
CENERAL HARDWARE.	

#### GENERAL HARDWARE.

There is but little change to notice this week, either in the condition of the market or in values. A correspondent, writing from the

Southwest, says:

"The influx of orders still keeps up, both in size and quantity, which we believe to be the result of drumming more than actual demand; therefore, the jobbers are still kept active, but the small trade is crying out and complaining of the meagreness of their sales. The demand for Agricultural Implements is exceedingly good, especially for Sulky Plows and Plow Sulkies. In fact, we never remember so great a demand for these goods at the commencement of any season."

The American Screw Company will issue the following circular to-morrow:

Circular No. 6.
PROVIDENCE, R. I., March 30, 1876.

PROVIDENCE, R. I., March 30, 1876.
GENTLEMEN: —Since our last circular circumstances have transpired whereby we shall make no immediate change in the price of our Gimlet Pointed Screws.

Instead of a reduction, as then anticipated, for a time our prices will remain as at present, We have a full assortment of all sizes on hand, and respectfully solicit your orders, which shall have our prompt attention.

AMERICAN SCREW COMPANY.

Nails are in fair though not active demand, and prices are unaltered. We quote, as bebefore, 10d., in lots of 100 kegs and over

The Enterprise Manufacturing Co., Graham can be attached to the outside of a window. as will be seen by the following list, which is subject to the company's usual discount:

		FLAG	HOLDERS.		
	Pric	e List to t	he Wholesale	e Trade.	
				Per hu	ndred
Holding	36	inch stick.	Japanned		8 2-5
66	36	44	Galvanized.		4.0
4.6	62	65	Japanned		8-9
64	37	68	Galvanized.		5-0
44	26	9.6	Japanned	*******	6.0
66	29	9.5	Galvanized		9:0
86	29	64	Contramised		9.0
65	76	94	Japanned	********	9.0
	26		Galvanized.		16.0
64	34	6.6	Japanned		. 18.0
6.5	34	44	Galvanized.		21.0
64	136	44	Japanned.		40.0
6.6	136	66	Galvanized.	*********	66.0
4.6	*29	0.5	Japanned		66.0
64	-	64	Sapanned		
**	32	**	Galvanized.		100.0
		Donh	le Holders.		
Holding	2/11		apanned		.11-0
Lioiding	C	in the state of	alvanized	**-*****	STY O
	79				19.0
		Sinding	Movement.		

Japanned... Galvanized ENTERPRISE MFG. Co. of PA.
GBAHAM & HAINES, Agents. 88 Chambers street. The Bailey Wringing Machine Co. illustrate, in their advertisement on the 25th page, the "Defiance" Metallic Bench Planes and kindred goods, for which they are sole agents. They have issued the following reduced price list for these goods for the season of 1876, which is subject to discount 25 per cent. In presenting this list they say :

Holding & inch stick, Japanned... Galvanized

We take pleasure in calling the attention of dealers and mechanics to the assortment of tools illustrated in this price list. It will be noticed that we have increased our line of Metallic Planes, and now offer no less than 16 different styles and sizes, on which we have spared no effort or expense to make them surveice to any in the market.

tal for week. \$6,947,968 \$4,170.096
ee Jan. 1... \$68,962,950 \$88,007,090 \$60,070,949

EXPORTS OF SPECIE.
For the week ended March 25:
Total for the week. \$255,296
Previously reported. \$91,996
tal since Jan. 1, 1876 \$1,167,212
tal since Jan. 1, 1876 \$3,995,857
et in 1875 \$3,995,857 of the stock, which prevents any springing or trembling, thereby making what has long been desired, a perfect working Iron Bench

> the best quality of steel, made expressly for us. Each Iron is put in perfect working order and fully warranted.
>
> The larger refered. We manufacture our own Plane Irons from

> fully warranted.
>
> The large reduction we have made in the prices of these goods brings them within the reach of all mechanics, and the great convenience in operating renders them the cheapest Planes in use.
>
> They can warranted in contract the cheapest property of the che

They are warranted in every respect, and we invite a comparison of them with any others in DEPIANCE METALLIC PLANES.

cutter... \$1.50
F. Block Plane, with adjustment, sides and lever polished, adjustable mouth, brass knob; 7½ inches in length, 1½ inchemter.  

	inches in length, 1% inch cutter	j
	DEFIANCE PLANE IRONS.	
	Single Irons.	
	Inches 14 2 214 24 Per dozen\$4.75 5.25 5.75 6.25	,
	Donble Irons.	
	Inches         1%         2         2%         2%           Per dozen         \$8.00         8.50         9.50         10.00           Block Plane Irons         per dozen         \$3.50	
	DEFIANCE SPOKE SHAVES.	
	No. 1, Straight Handle, Steel Capper doz. \$ 7.00 No. 2, 5.25	,
	No. 8, Raised Handle, 5.25 No. 4, Straight Cast Iron Cap. 4 3.60	
-	No. 5, Raised " 3.60 No. 6, Straight " 3.00	
	No. 7, Raised " 3:00	

No. 3. Short	66	per d	
They have	also issued	the following	revised
price list of	Clothes Wri	ingers manu	factured
by them. It is advance in sor creased their	me sizes; al	so, that they	have in- Frame)

DEFIANCE BOX SCRAPERS.

the Novelty Wridgers :
PRICE LIST OF CLOTHES WRINGERS, MARCH 7, 1876 Novelty Wringers, with Curved Clamp. Will fit Round or Square Tubs 1% inches thick.

make a standing order for 5 dozen monthly of

	-	ize of oll.			esale, doz.
	Length, in.	Diam., in.	Retail Prices.	Less than 2 dozen.	Two dozen ormoreat 1 shipm't.
No. 1, Small Family Size. No. 2, Medium No. 3, Large	10	1% 1% 1%	\$7:00 8:00 9:00	\$6:00 72:00 80 00	70.00
Novelty Wringers, with Round or Square T	Str	aigh	nt Clan	np. V	vill at
No. 1%, Small Fam'ly Size No. 2%, Medium No. 3%, Large	10	1% 1% 1%	8.00	72:00 80:00	70.00
Excelsior Wring	ers	, wi	th Ben	ch.	
Wo A Madim Bamily Size	10	19/	0.000	00.00	97-00

1	No. 3%, Large " 11 1% 9.00 80.00 78.00
ı	Excelsior Wringers, with Bench.
ı	No. A, Med'm Family Size 10 1% 9:00 90:00 87:00
1	No. B, Large Family " 11 1% 10 00 98 00 95 00
1	No. C, Small Hotel " 11 2% 12 00 114 00 111 00
١	No. D, Medium " 12 2% 16 00 146 00 143 00
١	Excelsior Wringers, for Set Tubs.
1	No. E, Med'm Family Size 10 1% 8.00 82.00 79.00

No. F, Large	" 11 1%	9.00 90.00	87.00
No. G, Small Hotel	" 11 236	11.00 106.00	103 00
No. H. Medinm "		15.00 138.00	
No. J, Large "		25.00 283.60	
Sherman W No. 1, Small Family S	Man HOH S		58:00
No. 2, Medium No. 8, Large No. 4, Small Hotel Siz	10 1%		
No. 8, Large "	11 1%	9.00 80.00	78.00
No. 4. Small Hotel Six	se. 12 214	12:00 104:00	101:00

No. 2, Med'm Family Size|10|174| 8:00| 60:00| 67:00 Large Wringers, with Steel Rod Rolls, for Hotel, Laundry and Factory use.

BAILEY WRINGING MACHINE Co., Sidney Shepard & Co., Buffalo, N. Y., have

issued their circular and price list for their "Champion" Ice Cream Freezers for the coming season, which will be found below. These goods are subject to discount 83% per cent. CHAMPION" IMPROVED ICE ORBAM PREEZER.

Patented July 9th, 1872. For Hand or Power. Each.
No. 33, 32 quarts, Heavy Copper Cylinders... \$130.00
No. 34, 40 ..... 125.00

We beg to call the attention of confectioners and hotel keepers to our Champion Duplex and Champion Frame Freezers. All the parts are extra strong and well fitted. The fron frames give permanent and substantial bearings to the fly-wheel shafts. The wood platforms are fitted to receive and secure the tubs in position. By a simple movement of the layers on sition. By a simple movement of the levers on top of the frames, the Freezers can be set in top of the frames, the Freezers can be set in motion, or instantly detached when in motion. When detached, the top plates are entirely free and can be readily removed, so that the cover of the can may be taken off.

All the castings of the Freezers are of galvanized iron. They are in all respects the simplest, strongest and best Freezers made.

### " Champion" Geared Freezers. No. 19, 2 quarts..... each, \$3.00 Not the cheapest, but the best.

" Champton " Fly- Wheel Freezers. We introduced this Freezer in 1873 and it has

We introduced this Freezer in 1873 and it has given general satisfaction. It has been placed in the hands of confectioners in this and other cities, and thoroughly tested and approved by them. We have made such improvements in the mechanical construction as our own experience and practical ice cream makers have suggested, and spared no expense in making them in every respect the best freezer yet produced.

cog wheels together without binding and fric-

cog wheels together without binding and frietion.

Our object has been to get a rapid revolution of the cylinder, with the least complication of parts and the smallest amount of power. We have obtained this by the proportions and arrangement of the gearing, as well as by the perfect manner in which the parts are fitted together.

The dashers are the perfection of simplicity and effectiveness. They will beat the cream evenly, and make it light and smooth. They have an adjusting wood scraper to clear the frozen mixture from the surface of the cylinder. They can be quickly removed from the frozen cream, are smooth, easily cleaned, and free from holes and corners for the cream to get into and clog.

get into and clog.

The top plates are dropped into slots cut in the top of the tubs, and secured by three tinued malleable from hooks, so that they are held firmly in place, and can be readily removed.

The tubs are of the best material, and made with galvanized fron hoops.

The cylinders are made of extra heavy tin, in the best manner, with galvanized cast bot-

toms. We guarantee the "Champion" to give en-No. 6, Raised " 360 tire satisfaction. It will freeze quickly, works easily, beats No. 7, Raised " 500 lit will freeze quickly, works easily, beats No. 8, Straight Handle, Steel Cap 500 durable, and not likely to get out of order.

In our issue of last week we quoted Chas. W. Packer's Ice Cream Freezers at discount 20 @25 per cent.; we should have said discount 25 to 25 and 10 per cent., according to quantity, with a special discount to the wholesale trade. These discounts do not include the 40 quart. The following circular, recently issued, explains

COLEMAN EAGLE BOLT WORKS, 145 Columbia Avenue, Philadelphia.

The manufacture of the celebrated Philadelphia Eagle Carriage and Tire Bolts, Axle Clips, &c., heretofore carried on by Mr. M. J. Coleman, and subsequently by The M. J. Coleman Bolt and Nut Co., will be continued by the undersigned, who will keep up the high standard of their productions, and with increased facilities fill orders with the utmost care and ail possible dispatch. All accounts due and owed by the old company will be settled by the new firm. Soliciting the favor of your paironage we are,

Yours, very respectfully,

Welsh & Lea,
Successor to The M. J. Coleman Bolt & Nut Co.

For some time past there has been consider able irregularity in the quotation of Cast Steel Forks, Hoes, Rakes, &c., owing, we believe, to the fact that a few manufacturers (and these we are informed, are not makers of first quality goods), not in the combination, have placed their goods on the market at irregular figures. For first quality goods the combination price is discount 30 per cent. The following terms are issued by one of the largest manufacturers of these goods in the country, and is uniform with the terms issued by all the manufacturers in the combination:

#### STEEL GOODS .- TERMS TO JOBBERS.

We hereby agree, that if you purchase of us during the season ending August 1st, 1876, fifty (50) dozen of Forks, or fifty (50) dozen of Hoes, Garden Rakes or Hooks, and do not sell, or offer to sell, to any party at a greater discount from our list than our own terms for quantities less than the above, viz: Thirty (30) per cent., psyable January 1st, for full goods, and August 1st, 1876, for spring goods, or at the rate of ten (10) per cent. per annum, for eash, we will allow you in the final settlement, at the end of the season, seven and one-half (7%) per cent. extra discount (making 30 and 7% per cent.)

vanced the price of their Horse, Mule and Snow Shoes 121/4c. per keg. They quote these goods from store in this city as follows: Rhode Island Pattern Horse-Shoes, \$5.121/4; Perkin's Pattern Horse-Shoes, \$4.871/4; Mule Shoes, \$5.871/4, and Perkins Snow Shoes, \$5.871/4 per This price goes into effect April 1.

Guy C. Hotchkiss, Field & Co., Brooklyn, E. D., quote their Common Axles at 4%c. per pound; solid collar, case-hardened, chilled Box Axles, finely finished, at 8c. per pound.

Short, Solid Collar, Half Patent Axles. Long, Solid Collar, Half Patent Axles. And all other kinds at proportionately low fig-nres. Black Springs, 1½ in and larger, 10½c. per pound. Bright, Oil Tempered and other qualities at corresponding rates.

The Bailey Wringing Machine Company will occupy, after May 1, the premises No. 99 Chambers street, corner of Church.

Geo. N. Stearns & Co., Syracuse, N. Y., quote Backus' Patent Angular Borers discount 30 per cent., instead of 40 per cent., as published in their discount sheet of Feb. 1st.

H. S. Manning & Co., No. 111 Laberty street. have issued an appendix to their catalogue of 1873, in which they illustrate, among other specialties, the goods of the Morse Twist Drill and Machine Co., for which they are agents; Machine Screws, Bolts, Empire Portable Forges, and a variety of Machinists' Tools, Railroad, Gas and Steam Fitters' Supplies.

J. Clark Wilson & Co. announce the follow ing changes in the list of Soell Mfg. Co,'s. goods, to take effect April 1st :

Coopers' Cast Steel Dowelling Bits, 2% inch Twist, with Shank fitted for brace, same list as Auger Bits; formerly \$2.75 per dozen. Taper Pod Gimlets.

New Old List.
Assorted in the dozen.....Per gross \$12:00 \$9:00 Taper Pod Gimlet Bits.

Taper Pod Gimlet Bits, with
Per gross \$12.00 \$9.00 Taper Pod Gimlet Bits, with-

They have also changed the discounts on the following goods: Potato Hooks, Hoes and duced.

All the parts are nicely fitted together and are strong and symmetrical. The top-plates, gearing, dasher and the cylinder bottoms are of galvanized iron.

The shafts are of tinned wrought 1100, and the bearings for them are bored out, thus insuring a steady, true and free working of the count 33% per cent., as formerly; A. & E. H. Hardware jobbing business in New York.

Garden Reels, discount 25 and 10, formerly discount 20 per cent. With the above mentioned exceptions their list and discounts for Agricultural Tools is the same as issued by them last year.

E. C. Atkins & Co., proprietors of the Sheffleld Saw Works, Indianapolis, Ind., have issued an illustrated catalogue and price list for the goods of their manufacture under date of 1st instant. The following discount sheet accompanies the book:

Circular and Cir. Top Saws...per cent.
Shingle and Heading Saws...per cent.
Shingle and Heading Saws...per cent.
Mill and Drag Saws...per cent.
Diamond Tooth Drag Saws, 8 in., \$1:15;
10, \$1:25; 12, \$1:40 per foot..
Silver Steel Diamond Cross-Cut Saw
(Handles and Gauge included). per foot
Saw (Handles and Gauge included) per foot. American
Feather Edge
Improved Champion Cross-Cut Saw.
Diamond Cross-Cut Saw not Silver Steel—
Handles and Guage included)...per foot
Single and Double Hook and Com. Tooth
Cross-Cut Saws. per foot
Champion Cross Cut Saw for one man, with
patent Handle.
Thorough Brace Wood Saw Frames...per doze
With Silver Steel Diamond Blade, complete......per dozen 45 45 40 with Silver Steel Champ. Blade, comwith Silver Steel Champ. Blade, complete.....per dozen
With Champ. Toota Blade, complete...per dozen
With Champ. Toota Blade, complete..per dozen
With Com. Tooth Blade, complete..per dozen
Common Wood Saw Frame and Rod. per doz.
With Champ. Tooth Blade, complete..per doz.
Silver Steel Diamond Blade, filed and
act.....per dozen With Com. Tooth Blade, complete, per dozen
Silver Steel Diamond Blade, filed and
set, per dozen
Silver Steel Champion Blade, filed and
set per dozen Silver Steel Champion Blade, her dozen et. Der dozen Cham. Tooth Blade, filed and set. Der dozen Com. Tooth Blade, filed and set. Der dozen Patent Handles. Der per pair Saw Guages—Retail, \$3 per doz. Der cent. Stone's Saw Gunmers and Cutters. Saw Mandrels.

On Wednesday night last, Edward Phelan, administrator of the estate of W. F. Shattuck & Co., was drowned in the East River. Mr. Phelan was favorably known in the trade. At fifteen years of age he commenced his business career in the employ of the late W. F. Shattuck, and was eventually admitted to a partnership in the concern. Last Summer Mr. Shattuck was killed by a fall from the roof of his dwelling, since which time Mr. Phelan has conducted the business at the old stand, No. 113 Chambers and 95 Reade streets. It is a strange coincidence the sudden taking off of both members of this firm. Mr. Phelan was only 34 years of age at the time of his death. His body was found at Corlear's Hook, on Thursday last, and was interred in Greenwood Cemetery on Sunday. The funeral was one of the largest ever seen in the Eastern District of Brooklyn.

Philip S. Bigliu, for many years with the late firm of W. F. Shattuck & Co., will continue the Hardware commission business, representing those manufacturers with whom the old house has been so long identified.

As previously noticed, Bissell, Welles & will sell at auction, on Tuesday, April 11, at 101/2 a. m., at 113 Chambers and 95 Reade streets, the entire stock of W. F. Shattuck & Co., to close the estate.

We have received the following letters.

### THE COURSE OF TRADE.

To the Editor of The Iron Age: The following is a memorandum of all the jobbing and commission hardware firms in business in the city of New York, January 1, 1860. The names printed in Italics are deceased, or have declined business, leaving no successors:

Hermann Boker & Co. Hilger & Sons. Sullivan & Hyatt. Richards & Flury. Wright & Mace. W. M. Smith. A. L. Halstel & Son. Bliven & Mead. Ray Brothers. Blodgett, Brown & Co. Bliven & Mead.

Ray Brothers.
Blodgett, Brown & Co.
Hezekish King.

I. Anderson & Co.
Wm. Way & Co.
Edward Lynes.
Coffin, Brace, Bishop & Co.
Ingoldeby & Halsted.
Cornell Brothers & Co.
Sherman Brothers.
Samuel Roosevelt & Co.
John C. Tucker & Co.
John C. Tucker & Co.
Mooney, Cohn & Co.
Peter Duryea & Co.
Many, Baldwin & Many.
J. Datenport.
Clark & Scofield.
Bogert & Coakley.
Willets & Co.
France. Sourie & Oakley.

Willets & Co.

Willets & Co.

Brown & Spragus.

Russell & Erwin Mig. Co.

Wolf, Dash & Fisher.

E. Robbins & Bradley.

Bruff Brothers & Seaver.

James M. Weed.

Norton & Jewett.

Tatts & Colley.

Phelps. Beam & Co.

Sears, Adriance & Platt.

Morgan, Quackenbush & Co.

Peates, Yale & McFarlans.

Townsend, Van Buren & Co.

Churchill, Rogers & Welmore.

Pettibone & Dodge.

A. T. Russelt.

John A. Newbold.

Smith & Payns.

Belcher & Haviland.

Clark, Wilson & Co.

Wetmore & Co.

John W. Qvincy & Co.

Joseph H. Adams.

W. H. Livingston & Co.

Durrie & Rusher.

W. F. Shattuck.

D. B. Logan.

Thos. T. Smith.

tal, 58 firms; of which the

Total, 58 firms; of which there are now in Total, 58 firms; of which there are now in the business, by succession or continuation, 21 firms. The balance (37) have died or declined business. Of the original 58 firms, 27 never failed in the business; and of the 21 firms or successions now in business, 14 have never failed. The death roll has averaged one a year. The decrease in number of firms by nearly two-thirds may demonstrate concentration of trade in fewer hands. Three of the firms or corporations now handling General Hardware are very extensive manufacturers, and two others manufacture to some extent. others manufacture to some extent.

The object of this communication is to interest old associates, in business, and invite some

To the Editor of The Iron Age: Your edition of last week contains a letter from your correspondent, II. O. P., on the subject of Wood Screws, which you characterize as "amusing." There is very little "amusement" in the Hardware business, and my almanac does not tell me to "look for it about these days." To a dealer in Screws carrying stock liable to depreciation, the controversy referred to is of serious import; and while the manufacturers "play their little games" under a large margin of profit, the dealers are made to suffer severely through degree lations.

of profit, the dealers are made to sufferseverely through depreciations.

H. O. P. recites truly the "economical policy" of the American Screw Company, but does not go far enough to edify the public, nor do the parties in whose interest he seems to write understand the policy of the American Screw Company. A brief history of the Wood Screw business in this country, and the particular history of the present American Screw Company.

business in this country, and the particular history of the present American Screw Company, may be interesting to your readers:

Passing by the struggles of the New York, Poughkeepsie and Ramapo companies, we find the important Harvey patents and Whipple improvements mostly in the hands of two companies in Providence, viz., the Eagle Screw Company and New England Screw Company, with a limited license owned by the Utica Screw Company. The prejudice was in favor of James' English Screws; and the competition between the Eagle and the American Company was so strong that importers began to get

dames English Screws; and the competition between the Eagle and the American Company was so strong that importers began to get timid and to lessen their importations, while the prices were reduced to 60 per cent. discount from present list of prices.

Under a higher tariff, the rival companies combined, and an agreement for a division of the business was made. On the 1st March, 1836, the Eagle Screw Company, New England Screw Company, Utica Screw Company and Bay State Screw Company agreed to sell Flat Head Iron Wood Screws at 30 per cent. discount; but they soon got to cheating erch other. The Eagle Company put a "Ratchet Thread Screw" on the market, which became very popular, and the fight was again renewed, and prices declined to old rates. In the meantime the English manufacturers had acquired the right to use the Whipple machines, and they again worried the American makers from own market.

About the year 1859, the Eagle Screw Com About the year 1859, the Eagle Screw Company bought the controlling shares of both the Utlea and Bay State Companies, and held them in use for later operation. In 1860, the president and business agent of the Eagle Company went to England, and having "fixed" the retirement of foreign Screws from the American market, they came home, and through "Wood Screw Simmons" and the "Honorable Jenks" (both of Providence), 'tis said, "fixed" the present prohibitory tariff on Screws. The next move was a consolidation of the Eagle and New England Screw Companies, under the cor-New England Screw Companies, under the cor-porate name of the American Screw Company;

move was a consolidation of the bagic and New England Serew Companies, under the corporate name of the American Screw Company; then the prices were advanced from time to time, until on the 10th November, 1862, they were only 10 per cent. discount.

The high prices and large profits induced new parties to build Screw machines. A company was organized in Boston; the Union Screw Company, of Providence, was organized; the Northampton Company, the Continental Company and the Hartford Company, all of which have been bought out by the American Co., from time to time, as they became formidable enough to command attention. If at any time the American Co. sold screws at a reasonable price, it was done to effect the value of the shares of some rival company they desired to retire, or to get a new and favorable agreement with Nettlefold, Chamberlain & Co. On the 16th January, 1863, the price was net

On the 16th January, 1863, the price was net list. On the 20th August following, 25 per cent. discount; on the 8th of October, 15 per cent. discount; on the stn of October, is percent. discount; and so the fluctuations have continued up to the present time without any regard to the cost of production. Neither H. O. P., the "Cub of a Tiger," nor R. & E's Cæsar understand the situation if they suppose that with a few "pop guns," at Hartford or New Britain, they cau fire into the "Providence iron-clad Angel-1 defended fortress." and cause it to surrender. Bless their souls! how silly they are to suppose "the old War Elephant" don't have any policy, but is disturbed by the bark of so small an animal as the "Cub of a Tiger." Just wait the result of the bluff game now going on. I mean the felut in the Dundas Canada enterprise, and if John Bull is scared and accepts the new proposition, and agrees to keep his Screws out of this market, a policy will be developed which the "Cub of a Tiger" is now innocently contributing to support, and will eventually be rewarded by crumbs from "the old War Elephant's table."

For the information of your readers, I would cent. discount, and so the fluctuations have

For the information of your readers, I would say that at 50 per cent, discount there is still

For the information of your readers, I would say that at 50 per cent. discount there is still more than 50 per cent. profit to the makers of Wood Screws. Take I inch, No. 10, as the average size, the list of which is 37 cents—50 per cent. discount is 18½ cents. The cost of 1½ pounds of wire is 7 cents, the average cost to manufacture in war times was 5 cents per gross—tola local 12 cents per gross.

Now, John Bull can't send Screws here even at 40 per cent. discount. "Wood Screw Simmons" tariff forbids; therefore, Nettlefold, Chamberlain & Co. may squirm, but they must accept the award of the Angell's, and yield to the decrees of Providence; then the "little Cubs of Tigers" will be called to partake of just so much of the feast as the big elephant may dish out for them. Of course they will accept it, as 'tis business like to tax consumers to support monopoly; Providence demands it, and Angell's record all its decrees. Wait a little, and you will see an elephant "H o P." "It is fun for them but death to us."

FROGS.

SWAMPTOWN, March 27, 1876.

### BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.) WEDNESDAY, March 29, 1876. Scotch Pig-The market has been depressed since last report, but has rallied a Pipe, 91/2c., and Sheet, 10c.; usual discount to little, although prices are not very strong. The the trade. following are makers' quotations :

Gartsherrie No. 1...... Glengarnock No. 1... Eglinton No. 1... Manufactured Iron and Rails are without change to report.

### IRON.

American Pig.-The extreme depression that has characterized the trade for some time seems to be aggravated instead of lessened. We have several times lately stated that it was conceded that Iron was selling, in many cases, at less than the quoted prices. It is now fully known that several Pennsylvania companies. while publicly quoting a high price, have been selling at lower prices by different subterfuges, that kept the market at full figures. This state of things has now been met by the Thomas Iron Company putting No. 1 Foundry Iron to \$22. Consumers are looking for a still further decline; the opinion of a large number

tons No. 1 Foundry at 823; 1000 tons No. 2 same date. Many of the mines have resumed

paratively firm. The arrivals-say from 300 to Coal having to be made before the first of the quote: Coltness, \$32; Glengarnock, \$30 @ \$31; a rush of applications has followed, as was ex-Gartsherrie, \$31.50 @ \$32; Eglington, \$28.50 pected. @ \$29.

Iron Rails \$40 @ \$45, at mill.

Old Rails .- There have been no transctions, and we can make no quotations.

ote the sale of 1000 tons to go East, on private

#### METALS.

Copper.-Greater briskness has been obervable during the week, leading to sales on the spot of 500,000 pounds Lake Superior at 22c @ 221/2c. Those who were in want of Copper for the moment having secured the needed supply, the market has relapsed into a quiet state, and closed at 221/4c. @ 221/4c. Nothing transpires in futures. Baltimore we nominally quote 221/2c. On Saturday, London cabled Best Selected £84. 10/, a decline of 10/, and Chili Bars £77. 10/, an improvement of 10/. The Wallaroo Copper sold at London on the Instant, amounting to 2000 tons, brought £84, which is a less price than had been expected. Referring to the recent sudden recovery in Chili Bars, one of the London firms expresses itself as follows: "The first impulse was given by charters on the West Coast, which were cabled to have been but 900 tons for the second half of February. Since then several large orders for Liverpool buyers have appeared, which circumstance naturally tends to strengthen prices. On the other hand, orders for Manufactured Copper and Yellow Metal are very scarce, and makers are much in want of work. The state of the India market is still very unsatisfactory, Copper does not rise in value there in an equal ratio with the reduction in the exchange. We hope silver will not continue to fall." New Sheathing is firm at 31c., and Bolts and Braziers, 32c.; Bronze and Yellow Metal Sheathing, 21c.: and Y. M. Bolts, 28c., cash.

Tin .- A greater feeling of firmness is noticeable in our market. London, from £72/10 for Straits, has risen to £73, while Singapore, from \$21.50, has receded to \$21.371/4. At the Trading Society's sale in Holland, yesterday, but 7200 slabs Banca out of the 24,800 offered for sale were sold, we are told by cable, at 50 guilders, the balance being withdrawn. This pretended sale at 50 guilders hardly looks genune, for the market price but a short time previous was dull at 481/a. Probably it was bought in by the government when it was seen that there were no bona fide buyers at 50. Up to the previous sale the society has invariably met the market, and has done well by adhering to this rule. This policy of declining to sell Banca at its actual value is much blamed in metal circles in Europe. Consumers are buying Billiton in stead, or Straits, and the society will gradually accumulate a stock of Tin which will become highly embarrassing, unless the metal improves very materially, for which the prospects are at best doubtful. We quote in gold, large lines Straits, 16% e. @ 17c. ; English Refined, 17%c. ditto Common, 17c.; and Banea, 22c. Tin Plates have remained very dull. We quote, in large lots, ordinary brands, gold, per box: Charcoal Bright, \$7.371/2 @ \$7.50; ditto Ternes, \$6.75 @ \$7; Coke Tin, \$6.25 @ \$6.50; and Ternes, \$6.121/2 @ \$6.25.

Lead .- The government sale of 200 tons realized such low figures that the general market for Common Lead, at the high prices asked, has become extremely flat. The sale came off at between 6.251/c. and 6.27c., gold. Of Domestic some 30 tons sold at 6.45c., gold, and we quote the same 6.40c. @ 6.45c., gold. Foreign is nominal at 6%e., gold. Nothing new has occurred in Europe, where the market still dragged, ever since the termination of the Carlist war. But we can hardly be Harris S. E. brought to believe that the pacification of Spain is the real and main cause of the gradual decline on the other side for the Span. is the real gradual decline on the other side, rollish mines are situate in the extreme south of the Peninsula, the war having been waged at the northeast, except it be that many miners and in the army, and now return and in the army, and now return the more statement of the more state and a late spring opening. Bar is firm at 9c. ;

Spelter and Zinc .- If the makers of Domestic Spelter at their last meeting had re- $\frac{70.0}{66.6}$  solved to alter the price, we should probably have been informed of it by telegraph ere this; at all events, it sells slowly enough at 7%c., currency, some outside lots Martindale, Missouri, of good quality, offering at 7.60c., currency, cash, simultaneously. Foreign is as inactive as ever at 7%c., gold, the nominal price of W. H., still the only lot here. Nothing has transpired in futures. Sheet Zinc is steady

has transpired in futures. Sheet Zinc is steady at 85 kc. @ 8% c., gold.

Antimony.—The London price has been advanced to £65, but values here require some little time probably ere they can adjust themselves to this high ruling. With a moderate trade doing, we quote Foreign at 16c. @ 16 kc., gold.

COAL.

The Coal trade, like most branches of business, is in a very quiet state. The demand is small, and the amount of Ccal coming forward is also small, the Anthracite shipments falling.

Antimony.—The London price has been divisionally and the amount of Ccal coming for and the probably ere they can adjust themselves heartly sick of working for nothing.

Tin plates, bxs., 1018 Williams & Guion, Tin plates, bxs., 250 order.

The closely adhered to, as manufacturers here report trade dull, but they attribute it partially to the recent advance, which it appears is being closely adhered to, as manufacturers here report trade dull, but they attribute it partially to the recent advance, which it appears is being closely adhered to, as manufacturers here report trade dull, but they attribute it partially to the recent advance, which it appears is being closely adhered to, as manufacturers here report trade dull, but they attribute it partially to the recent advance, which it appears is being closely adhered to, as manufacturers here report trade dull, but they attribute it partially to the recent advance, which it appears is being closely adhered to, and they are hopeful cf as to cosely adhered to, as manufacturers here report trade dull, but they attribute it partially to the recent advance of the closely adhered to, and they are hopeful cf as to cosely adhered to, as

To the Editor of The Iron Age: Your edition Iron Company report the sale of 400 considerable below those of last year at the operations, and all will be in operation shortly. While there are applications filed with the companies for large amounts of Coal, there are, as yet, no means for ascertaining how much of the quantity will be delivered. Applications for We month, in order to obtain Coal at present rates,

On the 29th the miners of the Shenandoah Rails.—We hear of no transactions of any importance. The purchase of Rails reported by the Eric Railway has not been made, some the proposed reduction in the contract work unexpected difficulties having arisen in the and the additional labor imposed upon them settlement of the details. We quote American in the preparation of the Coal. Morethan 1200 men and boys are idle at the above named collieries. Other miners have submitted to similar demands, and it is thought Scrap .- There is no change in price. We that the strike will not continue long. The bituminous trade seems to be in a satisfactory condition. While some of the regions are slightly behind the production of last year, the totals of all the regions show an increase of nearly 200,000 tons for the year. The total quantity coming to market at this season of the year is not large. Some of the companies have not, as yet, fixed upon their prices. Freights at the present time are very low and unsettled, and the remark is sometimes made that they can be got for almost any figure. Eastern manufacturers can certainly obtain much better rates now than later in the season, so much lower in fact that the cost of their coal can be materially reduced. We do not quote rates to different points, on account of the uncertainty in regard to them. We make quotations as follows:

Broad Top, at South Am	boy.			0.0		4.15
Morrisdale, Wigtons						2.00
Cunard					@	4.25
Consolidation Coal Co. f. town	f. o.	b., 7	orge		@	3.65
more In barges at New York					0	3.90
WYOMING COALS.	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Lackaw'na & Scrant'n at						
Hobok'n & Weehawk'n	4.60	4.70	4.80	4.90	2.20	4.40
Pittston at Newburg	4.45	4.20	4.66	4.72	2.82	4.2
Wilkesb're at Port John-						
ston					5.20	
Plymouth			4.80	2.00	5.60	4.80
Susquehanna Coal Co. at						
Amboy	4.60	4.20	4.80	2.00	5.20	4.80
Amboy Kingston at Hoboken	4.60	4.40	4.80	4.30	2.20	4.4
Black Diamond at Perth						
Amboy	4.60	4.40	4.80	4.80	2.20	4.20
LEHIGH COALS.						
Old Company at Port						
Johnston	5.10		4.30	4.30	5.20	4.80
Old Company's Room						
Run at Port Johnston.	2.10		4.30	4.50	5.20	4.80
Sugar Loaf, Hoboken and						
Amboy	2.10		4.80	4.80	5.20	4.80
Lehigh Coal Exchange at						
Port Johnston	2.10				5.20	
Honey Brook Lehigh	2.10		4.30	4.30	5.20	4 80
Beaver Meadow at South						
Amboy	8 - 10	**	4:00	4 . 00	5.50	4 ° RO

### IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending March 28, 1876:

Iron.

Steel.

Metals.

Allen R. H. & Co. Casks, 3 Armstrong M. & Sons, Cases, 2 Baldwin Bros. & Co. Files, cks., 8 Files, cks., 8 Packages, 4 Casks, 2 Iron wire, bdls., 3510 thox, a gun ker Hermann & Co. Mdse, pkgs., 29 Files, cks., 7 Casks, 2 Cases, 4 Wire rope, coils, 64 Eggleston Bros. & Co.
Bars, bdls., 63
Bars, 308
Henderson Bros.
Pig, tons, 100
Lang W. Bailer & Co.
Bundles, 130
Bars, 113
Laughland & Co.
Haybands, bdls., 115
Naylor & Co.
Spiegel, tons, 101
Phelpa, Bodge & Co.
Sheet, bdls., 122
Order. Brown Bros. & Co.
Wire rope, coils, 6
Degraw, Aymer & Co.
Chains, 2
Flesch A. & D. & Co.
Cases, 4
Criedmann & Lauteriu ls, 644 Cases, 4 dmann & Lauterjung Mdse. pkgs., 3 Crie Fuller Bros.
Mdse. pkgs., 61
Anvils, 60
Casks, 4
Cutlery, cks., 2 Order. Pig, tons, 200 Bar, bdls., 182 Cutlery, cks., 2
Sheep shears, cks., 5
Hedge shears, cks., 1
eld A. & Co.
Mdse. pkgs., 18
Gun caps, cs., 4
Casks, 4
Anvils, 200
Chains, cks., 3
eutal Geo. & Son,
Casks. 2
Varies E Dolge A.
Wire, cks., 2
Prosser Thos. & Sons,
Mdse, pkgs., 1
Tire forgings, 40
Sulzbacher & Hyman,

Hardware.

Salzbacher & Hyman, Packages, 218 Bars, 50 Seddon R. Bundles, 16 Cases, 23 Casks, 8 Sanderson Geo. & Co. Bundles, 77 Order. er. Bundles, 264 Rods, bdls., 37 Casks, 5 Cases, 2 Bars, 10 Guns, cs., 2 Roosevelt S. & Co. Casks, 2 Sickel F. Boxes, 1

Bruce & Cook,
Tin plates, bxs., 375
Terne plates, bxs., 25
Byrne Joseph & Co.
Tin plates, bxs., 1479
Drexel, Morgan & Co.
Lead, pigs, 1410
Jex Wm. & Co.
Scrap, copper, cks., 1
Knowlton & Co. Strasburger, Pfeiffer & Co.
Packages, 4
aders Walter,
Gun caps, cs., 5
aoverling & Daly, Scrap, copper, pkgs., Schoverling & Daly,
Arms, cs., 14
Tomes Francis & Co.
Gun wads, cs., 1
Tillotsor L. G. & Co.
Galv, wire, lots, 200
Upson & Walton,
Wire rope, coils, 14
Van Wart & McCoy,
Mdse, pkgs., 6
Pleces, 16
Packages, 2 Macy's Josiah Sons Zinc, bbls., 200 Zinc, bbls., 200 Naylor & Co. Tin plates, bxs., 2466 Phelps, Dodge & Co. Tin plates, bxs., 9869 Black taggers, bxs., 300

Williams & Guion,

is that it will go to \$20. The Thomas is also small, the Anthracite shipments falling in some departments. White Rags are very cars in Pittsburgh.

dull, and quotations have a drooping tendency. Colored Rags are in better request and prices are firmer. Grass Rope is in good demand, and manufacturers are paying 41/4 cents a pound for all they can get. Our quotations, with the exception of Pewter, Nos. 1 and 2, remain unchanged. The following are the pur chasing prices offered by dealers :

chasing prices offered by dealers:
Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 5c.; Zinc, 4½c. @ 4½c.; Pewter, No.1, 15c.; do., No. 2, 8c. @ 10c.; Spelter, 5½c., Wrought Iron, \$27 per ton; Light do., \$14 per ton; Stove Plate, \$12 per ton; Machinery, do., \$14 ner ton.

TIN PLATES.-The market is very active, and sales are both large and numerous at the following prices in currency: I. C., 10x14, \$8 50; 10x14, \$10.75; Best Charcoal, 28x20, \$16.50; other good brands, \$15 to \$16; good fair, \$14.50 to \$15; Bright Tin, for cans, &c., \$7 to \$7.25; good Bright Tin, do., \$6.75 to \$7.25; Coke, leaded, 14x20, \$6.25 to \$7.

### PITTSBURGH.

PITTSBURGH, March 28, 1876. PITTSBURGH, March 28, 1876.

PIG IRON.—Trade continues dull. There is less doing now than there was a month ago, and, while standard Western Mill Irons are still holding their own, the general spirit of the market is weaker. There is considerable Iron of an indifferent character being made, and it is being offered from \$1 to \$2 per ton below the purce of good stock; but those mills baying an of an indifferent character being made, and it is being offered from \$1 to \$2 per ton below the price of good stock; but those mills having an eye to the future, and anxious to keep up the reputation of their product—a very important matter—prefer paying the difference for good stock, as there is no question but it is the cheapest in the end. Standard Western Mill Irons may be fairly quoted at \$22, 4 months, or \$21 to \$21 25, cash, but there has been considerable Eastern (Anthracite) sold here recently at \$20, cash, equal to about \$17.50 to \$18 at furnaces. Charcoal Iron continues very dull, and with the supply accumulating, a very light demand and a stronger disposition to sell, prices are weak and drooping. No. 1 Foundry, \$25; Hanging Rock Cold Blast Car Wheel, \$45. It is probable there will be an increased demand for Mill Iron within the next week or so, but the indications are that the mills generally will continue to buy only as there immediate necessities require.

Mantactured Iron.—Nothing particularly new to report; business has been checked up somewhat, as it was expected it would be.

new to report; business has been somewhat, as it was expected it would be, in consequence of the advance, as buyers are holding off in order to discover whether it will be sustained or not. It is encouraging to holding off in order to discover whether it will be sustained or not. It is encouraging to learn that the new card is giving very general satisfaction, and there is every indication that it will be closely adhered to. Manufacturers are satisfied that to/continue, the cutting, so common prior to the meeting in this city two weeks ago, was certain destruction, and even those who heretofore have been first to kick in the traces will now act in good faith. Bars fairly quotable at 2:30, sixty days.

NAILS.—Market is firm, with more orders offering than buyers are willing to accept at current rates, in view of the fact that an advance, it is thought, will be agreed upon by the Western manufacturers, who will meet here either to-morrow or next day; your correspondent is not certain which. Quotations may be given as \$2.50 to \$2.55, sixty days, with two per cent. off for cash. It is expected that prices will be advanced to \$2.75, sixty days.

Steel.—Business continues active; nearly all the mills are reported busy, some of them uncomfortably so, being pressed with orders, and the general outlook at the present writing warrants the prediction that the mills will continue to have all they can do all this year, as domestic has almost entirely superceded the foreign article.

Whought Tubing.—At a meeting in this city, of manufacturers from all parts of the country, on the 15th instant, the card was changed somewhat, by which prices were advanced, and there is reason to believe that the new card will be closely adhered to, as manufacturers express themselves heartily sick of working for nothing.

COPPER.—Copper manufacturers here report

WINDOW GLASS.—Manufacturers generally report t ade dull, unusually so, but the new card, so ffar as known, is being closely adhered to. There is to be a meeting of manufacturers in Cincinnati, on the 29th inst., but it is not a weeklable. not expected that any change will be made in the card.

#### BOSTON.

romain unchanged. The following are the puchasing prices offered by dealers:

Old Media, Loc, Perper, 16c. @ 17c. per lb.; Yellow Metal, Lic.; Brass, 16c. @ 17c.; Per lb.; Yellow Metal, Lic.; Brass, 16c. @ 17c.; Per lb.; Yellow Metal, Lic.; Brass, 16c. @ 17c.; Per lb.; Yellow Metal, Lic.; Brass, 16c. @ 17c.; Per lb.; Per lb.; Yellow Metal, Lic.; Brass, 16c. @ 17c.; Per lb.; Per lb.; Yellow Metal, Lic.; Brass, 16c. @ 17c.; Per lb.; Per lb.;

#### BALTIMORE.

Messrs. Wyeth & Brother, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of March 28: We have nothing of interest to note for the past week, only the same continued dull and stagnant market, with sales shading quotation figures to make business.

AMERICAN REFINED BAR IRON.

Messrs. R. C. Hoffman & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of March 27: The Iron market remains unchanged. Transactions very light, and we report last quotations as follows.

### CLEVELAND.

Messrs. C. E. BINGHAM & Co., 25 West Main

market as follows, 4 mos. time: CAR WHEEL AND MALLEABLE IRON. BESSEMER IRON. Nos. 1 and 2 Lake Superior Charcoal.... \$28.00-4 m. FORGE IRON. 

### RICHMOND.

Mr. Asa Snyder, from Merchant and Furnace Agent, Richmond, Va., writes as follows under date of March 27: Market for Charcoal Irons very quiet. Sales, however, continue in excess of receipts, and prices remain firm at quota-

Virginia cold blast Charcoal Pig Irons

### ST. LOUIS.

Messrs. Spooner & Collins, from commission agents, 409 North Third street, St. Louis, under date of March 23, report the from market as follows: We take pleasure in reporting our

market as much improved in demand, though there is no change in prices. There is a very active inquiry for Foundry Irons, mostly No. 2, though we note a few good sales of No. 1. We quote on 4 mos.:

Me duote on a mos.	
Mo. Stone Coal, No. 1 F'dry.	25.00 @ 26.00-4 mos.
No. 2 F'dry.	24'00 @ 25'00-4 mos.
Gray Mill	24.00 @ 25.00-4 mos.
" Charcoal, No. 1 F'dry	24.00 @ 25.00-4 mos.
" No. 2 F'dry	23.50 @ 24.00-4 mos.
" Gray Mill	23.00 @ 24.00-4 mos.
Tenn. Charcoal No. 1 F'dry	24.00 @ 25.00-4 mos.
" No. 2 F'dry	23.00 @ 24.00-4 mos.
" Gray Mill	23.00 @ 24.00-4 mos.
Va. Coke Iron No. 1 F'dry	25.00 @ 26.00-4 mos.
No. 2 F'dry	24.00 @ 25.00-4 mos.
" Gray Mill	23.50 @ 24.50-4 mos.
H R Charcoal No. 1 F'dry	26.00 @ 27.00-4 mos.
H. R. " No. 2 F'dry	24'00 @ 25'00-4 mos.
H. R. " No. 2 F'dry H. R. " Gray Mill	24.00 @ 25.00-4 mos.
Massillon Iron. A, No. 1	31.00 @ 32.00-4 mos.
B, No. 1	29.00 @ 30.00-4 mos.
11 No. 2	27.00 @ 28.00-4 mos.
Cold Biast Car Wheel, Mo	35.00 @ 40.00-4 mos.
Tenn.	33.00 @ 35.00-4 mos.
Tenn.	33.00 @ 35.00-4 mos.
Hang-	
ing Rock	82.00 @ 33.00—4 mos.
Mo. Charcoal Blooms	60.00 @ 70.00-4 mos.
" Scrap	55.00 @ 60.00-4 mos.
Mo. Charcoal Hammered	
Billets	75 00 @ 80 00-4 mos.
	@ 2.35—90 dys.
No. 1 Wrought Scrap Heavy Cast	1.10 @ 1.25—cash.
Heavy Cast "	·75 @ ·95—cash.
Light Cast "	·50 @ ·60—cash.

#### LOUISVILLE.

Mesers. Geo. H. Hull & Co., under date of March 27, writes us as follows: Since last report our market has been a little more active for mill grades and fron suitable for steel purposes. Although quotations remain unchanged, there is a fair demand for standard Mill Irons, and holders of choice brands are not disposed to make concessions. All grades of Foundry are duil and unchanged. The usual time, four months, on the quotations below:

No. 1 Figy, from Hanging Reck Ores. \$25.00 @ 26.00

HOT BLAST CHARCOAL.		
No. 1 F'dry, from Hanging Reck Ores.	25.00 @	26.00
	40 10 10	44 CO
1 31111,	- @	-
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	23.00 @	24.00
2 F'dry, from Alabama, Georgia and Tennessee Ores	22.00 @	23.00
" 1 Mill, from Alabama, Georgia and		
Tennessee Ores	21 00 @	55.00
HOT BLAST STONE COAL AND CO		
No. 1 F'dry, from Hanging Rock Ores.	23.00 @	24:00
66 9 46	22.00 @	23:00
" 1 Mill. " " " "	21.00 @	
" 1 F'dry, from Alabama, Georgia	*1 00 0	200
and Tennessee Ores	23.00 @	24.00
" 2 F'dry, from Alabama, Georgia		
and Tennessee Ores	22.00 @	23.00
" 1 Mill, from Alabama, Georgia and	_	
Tennessee Ores	21.00 @	22:00
No 1 F dev from Missouri Ores	24.00 @	
No. 1 F dry, from Missouri Ores	24.00 @	
	25.00 @	
" 1 Mill, " "	\$0 00 W	40 00
COLD BLAST CHARCOAL.		730
Car Wheel from Hanging Rock Ores	85.00 @	40.00
Tennessee Ores	28.00 @	
44 Alabama and Georgia	*00 (G	00 00
Alabama and Georgia	000	00.00
Ores	28:00 @	
Car Wheel from Kentucky Ores	28'00 @	40.00

#### CINCINNATI.

Messrs. L. R. HULL & Co., under date of March 26, write us as follows: Pro Irox.—While we can report a very good movement in Iron during the past week, prices have, if anything, grown weaker, probably in consequence of discouraging reports received from Eastern markets. Stocks are light, and consumption very good. The only apparent cause for depression being a lack of confidence in the future. Prices are yet quotable at about as last reported: last reported : CHARCOAL.

CHARCOAL.
Hanging Rock No. 1 9 ton. \$25.00 @ —4 mos.
Southern Brands No. 1 23'00 @ 24'00-4 mos.
Virgin's No. 1. 21.00 @ 25.00—4 mos.
" Forge 21 00 @ 22 00—4 mos.
STONE COAL AT D COKE,
Hanging Rock No. 1 \$\varphi\$ ton. \$23.00 @ -4 mos4 mos4 mos.
Red Short No. 1
Am. Scotch, No. 1 24 00 @ 25 00-4 mos.
COLD BLAST.
Hanging Rock Car Wheel \$9 tn.\$40.00 @ 50.00-4 mos.
Missouri " " 35 '00 @ 40 '00 — 4 mos. Southern Br'ds " 30 '00 @ 40 '00 — 4 mos.
Southern Br'ds " 30.00 @ 40.00—4 mos.
Machinery and Forge 80.00 @ 35.00-4 mos.
Blooms

### FOREIGN.

### FRANCE,

PRANCE.

(Moniteur des Intereix Materiels).

PARIS, March 12, 1876.—Metals.—Matters in the metal trade of Europe still continue unsatisfactory. What between extensive floods and the depreciation of silver, trade on the Continent as well as with the East is anything but brisk, and metals have not resumed that activity which might have been reasonably looked forward to so close upon the usual spring revival. Copper, however, begins to form an exception, for, in spite of the general absence of speculation, some operators have been bold enough so purchase some Chill Bars to arrive, and as the metal is statistically deemed in a sound position, consumers now also show greater willingness to reenter the markets. Though firmer the French markets have, as yet, remained quiescent, and we quote as follows, here: Chill Bars, deliverable at layers 20750 frances the 100 kilos; Common ditto, enter the markets. Though firmer the French markets have, as yet, remained quiescent, and we quote as follows, here: Chill Bars, deliverable at Havre, 307:50 francs the 100 kilos: Common ditto, 205; Ingots, 217:50; English Tough Cake, 215; and pure Corocoro Ore, 210. Havre is steady as follows, less 4 per cent.: Chill Bars, 207:50 to 21:20; Refined Ingots, 230 to 222:50; pure Corocoro Ore, 307:50 to 210; Lake Superior, 235 to 237:50; to di Yellow Metal, 140 to 145; old Copper, 305 to 210; and Bronze, 160 to 200. Marsellles is firm: Tokat at 305; small Refined Ingots, 315; Sheathing Copper, 240; Yellow Metal ditto, 210 to 215. Tin.—The position of this metal does not improve as long as countries in the face of an uninterrupted decline in Europe. In many instances they have preferred to buy Tin instead of silver for the making of remittances, as they seem to be less afraid of Tin at the present price than of silver. It is to be hoped that at the low stage of value at which Tin has arrived, its consumption will be indefinitely increased for many purposes for which it was higherto to dear. Only in this manner can the downward tendency be arrested, for we are afraid production will not diminish till we have dropped to a much lower figure. The French markets have been paralysed. We quote here, Banca, at Havre or Farls, 225 frances the 100 kilos; Straits, 206; and English, 210 francs. Lead continues to weaken, although we cannot see much reason for this declines to close upon spring and summer. We do not see that the pacification of the North of Spain makes much difference when the Lead is produced in the South, and the Lead not used in war in the Peniasia will go to Cuba to finish the insurrection there. We are quiet here between \$5.50 francs and \$6.50. Havre is at 56. Marseilles, first fusion, 51:50 to 32; second, 58. Speiter.—Some speculators on the Continent have been laying in a more plentiful supply of this metal than they seem to be able to conveniently handle or curry, and they have resold to dealers, who, in

Iron in France in 1875 h.s diminished but 314 per cent. The total production for the year sums up 1.423,000 tons. Merchant iron production has increased considerably, being 42,000 tons in excess of 1874, and 'his to some extent explains the drop in prices it has undergone in our midst. Of Iron Rails we have turned out 32,000 tons less than in 1874, owing, no doubt, to the gradual superceding of Iron Rails by teel ones. Steel production, nevertheless, shows but a feeble excess of 21,600 tons. In consequence of the heavy rains, our rivers have risen so considerably that navigation on them has become impracticable, and the railroads have conveyed Coal where there was a pressing need for it. Prices of Coal are, however, by no means firm.

BELGIUM.

(Revue Universille).

BRUSSELS, March 12, 1876.—Iron.—We are glad to be able to advise that Iron matters in Belgium continue to slightly look up. in consequence of some large and favorable contracts made abroad and at home. Among others, there is the one for 150 kilometers of railroad, concluded by the Transvall Republic of South Africa, near the Cape of Good Hope, with the Dyle Society, at Louvain. As the latter company makes but one specialty, but has to equip the said railroad in full, the remaining Belgian works will in their turn be employed by the Dyle Society to furnish the complete material, &c. This is a case in point, showing what we have insisted upon at all times, that our manufacturers have been relying too much altogether, for years past, upon the government demand for the State railroad lines, and that we have to procure connections abroad if we wish to rid ourselves of all we produce. Belgium is a small country when we look upon it as a consumer, and an important one when we reflect upon the enormous production of the country. In Europe where the production of the country. In Europe we have, beside, many competitors, and we shall have to procure business from a greater distance. The Exhibition at Philadelphia will afford an excellent opportunity not only to ourselves but to other nations, as much for the formation of new connections in any portion of the civilized globe. Philadelphia, during a couple of months, will be the great center where representatives from China, Japan, Australia, Chili, Pera, Havana and Canada will congregate, either to show their goods or study those of others. We do not say too much when we pretend that those nations know more about Belgium and its productive capacity than we know about their consumptive capacity and wants. Whatever we may be lacking in the way of information in this respect we can acquire at the Centennial. Coal has been dull and uminteresting.

#### GERMANY.

GERMANY.

(Borsenhalle).

Hamburg, March II, 1876,—Metals—The spring revival is slow in developing this year, which is, in a measure, due to the severe winter, followed by an unusually wet spring. Widespread desolation is reported from many important quarters through floods, and the metal trade, along with general business, of course, feels the effect of it. Copper.—A rather improved feeling is growing up by degrees in this metal, and we trust it may prove lasting. Our markets are steady; Berlin quotes English and Australian 89:50 to 91:50 the 50 kilos, and Mansfield Refined, 91:50 marks. We are firm here as follows: Drontheim, 92; Demidoff, 98; Norweglan, 88:50; Lake Superior, 109; Quincy, 97 to 91: Chili Bars, 85. Stettin is quiet at 99 marks for Swedish, English and Chili. Th has become quite irregular once more in consequence of the course of prices at London, Berlin quotes Banca 91:50 to 92:50. Here, Eng ish is 90, and Banca 92. At Stettin, Banca still commands 96. Lead.—It is not easy to account for the falling tendency in Lead, yet it is a fact, and we have to take it as such. The German markets have also been weaker once more. Berlin quotes Tarnowitz, Hartz and Saxonian 22:50 to 93:50 narks the 50 kilos. We quote here as follows: English, 24 to 24:50; ditto Sheet, 24:50 to 25: German Pig, 23:25 to 23:50; English White Lead, 33; Dutch, 33:50 Stettin quotes Spanish 27; Tarnowitz, 24 to 25, and German, 24:50. Spetter.—The financial necessities of some operators have compelled some forced realizations, and the markets are not as brisk as they were, with a slight shading at some points, Breslan excepted, which remains firm. Berlin quotes Slesian 24:75 to 25:75 marks the 50 kilos. We are here 26 to 26:10 on the spot, and 26 to arrive. No quotation at Breslau, there being none available, and no dealings in futures.

HOLLAND.

(Koch & Viverboom).

ROTTERDAM. March 7, 1876.—Metals.—Tin.—The metal continues to decline. We quote Banca 49%, and Billition 45% guilders the 50 kilos. The second Dutch Trading Society's sale will come off on the 28th inst., when 34,800 slubs Banca will be offered at auction. Copper has been steadier at 50 to 52 guilders for Prontheim and 51 Russian Crown. Lead is hardly as firm. We quote Stolberg, 13½; Spanish, 13½, and German, 13½. Spelter may be called less firm at 13 to 14 guilders for Silesian. March 14.—In anticipation of the impending Tin sale the market is dull, with trifling sales of Banca at 48½, and Billiton to arrive at 45½.

### AUSTRALIA.

Melboure, Jan. 22, 1876.—Tin.—A company called the Victoria Stream Tin Co., limited, has been floated in London, to work the Tin mines of the Latrobe River, South Glipps Land. These mines are situated about 30 miles from Cannibal Creek, on the Gipps Land coach road, and are about 70 miles from Melbourne. The land claimed by the company comprises about 700 acres, held under leases obtained from the Mining Department. The London shareholders sent out Capt. W. Eddy, who claims to have had experience in Tin mining in California and elsewhere, to report upon the mines. After spending six weeks on the ground, he reported that he found stream Tin deposits varying in depth from 6 to 30 feet from the surface, and from 6 luches to 3 feet thick all over the flat, embracing an area of from 500 feet to 1000 feet in width through the valley. The average of the Tin assay was 65 per cent. He believed the lease contained continuous and large payable deposits of stream Tin, and that from the deepest part of the flat sufficient Gold would be found to pay working expenses. An expenditure of about £6000 will be required to obtain an uninterrupted samply of stream Tin. Mr. Eddy left Melbourne on Thursday with a party of men to commence operations. (Australasian.)

### EAST INDIES.

EAST INDIES.

(Giighlan, Wood & Co.)

Singapore, January 26, 1876.—The.—The supplies from Malacca have been on a very moderate scale, and prices are steady at \$22.50 per picul for ordinary quality. Late advices from Penang report more favorably from that market; the price of unsmelled Inhad advanced to \$41.87% per picul, and stocks had been much reduced. The Hero cleared for New York with 1389 piculs Tin, leaving that berth vacant. The Peter is still loading for Boston. During the past fortnight there have been no charters for the United States. There have been shipped in 1875 to the United States, from the Straits 63,277 piculs Tin, against 45,746, 37,758, 61,373, 49,808 and 40,304 in 1874 to 1870. Exchange is weak at 4/14 for to months' sight credit drafts on London. Feb. 9.—Moderate supplies from Malacca and more favorable news from London caused an advance to \$23 per picul, but since then less favorable advices have been received from the other side, and the price has declined to \$22.63%.

Batavia (Java), Feb. 3, 1876.—Tin.—The next bimonthly sale of 10,000 piculs is announced for the 14th inst. The last sale of Dec. 13, averaged 52.16 guilders per picul. Coal.—The cargo of Australian just arrived per Nereus from Newcastle, has been disposed of at 14 guilders per ton, delivered here from alongside, but to be weighed on shore, 3 months credit. Of English, 350 tons West Hartley have found buyers at 30 guilders per ton, delivered here from alongside, but to be weighed on shore, 3 months credit. Of English, 350 tons West Hartley have found buyers at 30 guilders per ton, delivered here from alongside, but to be weighed on shore, 3 months credit. Of English, 350 tons West Hartley have found buyers at 30 guilders per ton, delivered here from alongside, but to be weighed on shore, 3 months credit. Of English, 350 tons West Hartley have found buyers at 30 guilders per ton, delivered here from alongside, but to be weighed on shore, 3 months credit. (Gilflian, Wood & Co.)

### Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

> (From our Regular Correspondent.) SHEFFIELD, ENG., March 13, 1876. THE IRON TRADE

is in no sense in a better position, or, indeed, in a different condition from that which I de-picted in my last letter. The weeks continue to pass on and grow into months, which rapidly glide away without bringing that long expected and greatly hoped for amelioration of the state of trade. Expectancy has, to a great extent, given way to despondency, and the buoyancy of hope has, in most cases, disappeared, and been replaced by grim and stern resolutions to do "the best we can" under the circumstances. Visions of another 1872-1873 period haunt iron men's minds like phantoms, but there are no signs and tokens of anything approaching to the wondrous excitement of those comparatively haleyon days, and in place of "dreaming dreams" and building enchanted castles in the air as to what may be, we are daily called upon to note and experience how bare the market is, how keen competition has become, how little profit it is possible to sescure, and, in short, how difficult it is to keep our respective heads above the water of respectability and creditable trading in these dull and dreary times of bad trade. Not only do we hear loud local complaints in the district whence I am now writing, but there are universal lamentations from the iron manufacturers of the whole kingdom, and—poor crumb of consolation though it be—our information from Germany and some parts of Belgium reveals a similar state of things there. Merchant iron appears everywhere neglected, except some few brands of bars, hoops and sheets. Iron rails are in all directions wholly lost sight of. Steel rails are in very limited request at very low quotations. Railway tires are selling fairly well. Armor plates are being largely made at Steffield, and big guns to knock them in pieces are as extensively manufactured at the Woolwich Arsenal. In no other department is there any life or movement. For the time being our industrial existence is not progressive. It is arrested by the blight of an ill-balanced production and a restricted inquiry. In this predicament only those articles required for warlike purposes are in request. As soon as they shall be in actual operation, a demand will set in for instruments of peace, so paradoxically unintelligble is the law of demand and supply. expected and greatly hoped for amelioration of the state of trade. Expectancy has, to a great

#### BOARD OF TRADE RETURNS.

BOARD OF TRADE RETURNS.

The usual monthly returns of the Board of Trade, showing the amount, quantities and values of the imports and exports during the month of February are just issued, and, as usual, are very well worth looking over. In respect of the imports, I find we received 3585 tons of bar iron, 119,143 cwt. of manufactured iron and 618 tons of unwrought steel in the month. Of course, much of the bar iron will have been Russian and Swedish, but a good proportion would doubtless be from Belgium. Of exports, we arrived at a total value of £16,482,505, as compared with £17,467,256 in February, 1875, and £18,228,803 in the same month of 1874. In the two months ending February 29th, we sent off 269,323 tons of iron and steel, valued at £2,335,337, as against 309,502 tons, worth £3,707,839 in the same period of last year. In February, this year, the pig iron exports decreased 3000 tons, almost wholly with Holland and Belgium. The quantity of bar, angle bolts and rods increased nearly 2000 tons, mostly with Turkey. Of railroad iron of all sorts we dispatched 18,099 tons, or little more than half of the quantity in February, 1875. Of this year's total, 31 tons went to the United States! The exports of wire, sheets, hoops and plates dropped 300 tons, and of tin plates there was a slight decrease. Cast and wrought steel the diminution was 200 tons. I append some statistics setting forth the values of shipments to the United States during the first two months of this year, 1875 and 1874, thus:

### TO UNITED STATES OF AMERICA

76. £
,164
,019
.250
,806
,800
,869

The Glasgow warrant market was, with but slight interruptions, nearly quiet during the whole of last week, with an attendant relaxation of g.m. b. quotations. On Monday the figures current were 59/7½; Tuesday, 59/4½ to 60/3; Wednesday, 59/3 to 58/10; Thursday, 59/ to 58/6; and Friday, 59/3 to 59/. This morning there is little animation reported from Glasgow. Last week's shipments show ather morning there is little animation reported from Glasgow. Last week's shipments show tather more favorably, when compared with the total for the corresponding period of last year. Connal's stores now contain 62,830 tons. Freights are as before reported to New York. Glasgow to New Orleans is now 5/; to Boston, 9/; Baltimore, 8/; Philadelpiha, 10/; and Providence, 10/. Ballast pig iron remains stationary, at 47/6 per ton, delivered alongside in Forth or Clyde. Last week a good shipment of machinery pipes and tubes was made from the Clyde.

Writing on March 10th (evening), from Glasgow, Messrs. James Watson & Sons said: "The improvement noted in our last week's report has not been maintained; price of warrants has fluctuated this week between 59/3, 60/3 and 58/6, closing to-day sellers at 59/cash. Shipments last week were 9644 tons against 8291 tons in the corresponding week of 1875."

1875."			
		1	No. 1. No.
G. M. B., at Gla	sgow	 	60/ 59
Gartsherrie, "			69/ 60
Coltness,			72/ 62
Summerlee, "			69/6 60
Langloan, "			69/ 60
Carnbroe, 44	00000	 	64/6 60
Calder, at Port D	undas	 	72/ 60
Glengarnock, at	Ardrossan	 	67/ 60
Eginton,	69		
Dalmellington,	49	 	59/6 58
Shotts, at Leith.		 	70/ 62
Kinneil at Bone	66	 	62/6 59

There are sellers, to arrive, of West Hartley, deliverable at any port on the North Coast of Java, at 125. Exchange has advanced to 19-01½ to 12-02½.

Colongo, Ceylon, February 17, 1876.—Piumbago.—Supplies are extremely limited, at about our last quotations. There is a moderate demand from the United States. Feb. 28.—There is no change of importance to advise; the market is very barely supplied, and the demand moderate. We quote, free on board: Lump, 310/per ton; Chip, 170/, and Dust, 120/. Freight, 70/. Shipping.—The Killarney, probably, clears to-day; particulars of carpo in our next. A small vessel is required for March loading. Exchange is fluctuating; we quote, 1/9½ to 1/9½.

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				Del	iverab!	a along	roido
				The s	No.		No. 3.
. M. B. at G	IARGO	(V					597
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Coltness.	= 0					6	62 6
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angloan,	0.8						60.6
ambroe.	6.6					0.6	807
nonkland	6.6					1/6	59 6
lvde	66						61/
loven, at Bro	omial					3/6	59/6
alder, at Por						1/6	60/6
Hengarnock,						1/	60/6
glinton,	at At	uross	ORAL		01	1/45	58/6
	46		0.0		38	1/6	
Dalmellington					135		58/6
Carron, at Gra	ugem	outh		Innto	02	2/6	
arron, "	a b	есни	iy se	recte	d 70		100 10
hotts, at Lei	CH				70		62/6
Cinneil, at Bo	ness				69	6/6	59/
Bar Iron					28. 0	/ to #8	. 10/
Nail Rods					29, (	0/.	
		8111	PMEN	TH.			
							Tons.
Week ending	Marc	h 13.	1875				9,676
							7,097
							*400
Decrease .							2,579
Total deci	ense !	for 18	76				19.314
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artsherrie		13	8	16	69/	60/	f2/
Coltness		12	0	12	72/	62/	
ummerlee		6	1	8	69/	60/	62/6
angloan	*****	6	0	8	69.7	60/	68/
lovan		- 5	0	5	60/	59/	62/6
'alder		4	0	7	*72/6	60/	68/
( Bogu's	mer l	2	0	2	80/	007	90/
hotts   Bess'	ary (	4	1	6	70/	62/	69/
Carnbroe	ary 9	5	1	6	64/	59/6	63
Vishaw		3	0	8	UB/	00/0	03
W RESIDENT							
Lordel Sed					60.7	807	801
Monkland		5	1 0	6	60/	59/	60/

\* f. o. b. Glasgow, 1/ per ton, extra.

Quarter-Clyde...

Glasgow Warrants	8, 3-5	No	. 1; 2	-5 No.	8, g. 1	m. b.,
WEST COAST BI	RAND	9-1	. o. b.	Ardro	ssan.	
llengarnock Ardeer	7 4	2 1 2	91	66/6	60/	61/
durkirk 2007	3 8	0 0 3 2	8 6	89/	38/	59/
Dalmellington	6	2	8	59/	58/	58/
EAST COAST BE	AND	1-f.	o. b.	in the	Forth.	
Cinneil	3 2	1	4	62/	59/	59/
Almond	2	1	8	65/6	59/	59/
Carron { Selct'd } Ordn'y }	4	2	6}	70/ 62/6	**	**
ochaelly	0	4	4	0.07.0	**	**

#### BOLCKOW, VAUGHAN & CO. (LIMITED.)

BOLCKOW, VAUGHAN & CO. (LIMITED.)

The annual report of this great company observes that the iron rail trade was all last year, and still remains, in an unprecedentedly depressed state, and the few orders which were in the market could only be secured at unremunerative prices. In consequence of this, the company's rail mills have been unemployed during a considerable portion of the year. The report proceeds to state that: "The steel works at Gorton have been disposed of, and, in consequence, an entirely new plant will be available for the new works at Eston. These works have been commenced, and every effort will be made to get them into operation with the least possible delay. Owing to the continuance of the civil war in Spain, the company's iron ore mines at Bilbao are still unremunerative, but the directors believe that the war will soon terminate, and the export of iron ore commence. The ironstone mines at Skeiton and the Binchester Colliery are now well opened out, and capable of producing large quantities of iron stone and coal of excellent qualities, and will, in future, be a valuable addition to the company's property. The iron and coal trades continue in an exceedingly depressed and unsatisfactory state, and until higher prices can be obtained only moderate profits can be expected. Since the last call was made, the directors have expended on capital account the sum of £990,000, and they have determined to make a further call of £5 per share on the A shares of the company, and to take powers at a special meeting of shareholders to increase the 5 per cent. preference capital to a sum not exceeding £400,000."

The new works thus alluded to will be built upon 40 acres of land specially bought for the purpose. There will be six new blast furnaces, specially designed for the smelting of hematite ore, and a large plant for making Bessemer steel and rolling ralls. As soon as the company gets its ore from Spain there will be no doubt of this step being rendered remunerative. Cleveland, as a district, is rapidly

is being kept up, partly for rolling into rails and partially for export or for other districts. The steel rail trade is irregular. About three establishments appear to be producing largely, whilst all others are doing nothing at all. The annual report of Brown, Bayley & Dixon (Limited), issued on Friday evening last, is a document of great interest to the tride at large, especially when the previous peculiar situation of the concern is taken into consideration. The company is now fortunate in having as its general manager Mr. Calvert B. Holland—formerly manager of John Brown & Company, Atlas Works—one of the most accomplished business men of the trade, particularly as regards the Bessemer steel branches. The report is on this occasion of a particularly favorable character, taking into consideration the 'espressed condition of the trade generally, inasmuch as it shows a gross profit of £36,638 on the year's trading. After deducting £8500 paid for the conpromise of certain unfavorable contracts for the deliyery of pig iron, £7625 for depreciation, £354 for preliminary expenses, £8198 for interest on debentures, and £2892 for bad or doubtful debts, there remains a balance of net profit of £9068. The shares of the late Mr. George Brown, representing £65,000, and £15,000 standing in like manner in the names of Messrs. Bayley and Dixon, have been extinguished, by which process the capital of the company is reduced by £80,000. The report proceeds to state that in the latter part of 1875, the directors, with a view of manufacturing spiegeleisen, negotiated for the hir of one of the blast furnaces of the Chariton Iron Works Company at Grimesthorpe. This furnace was put in blast on January 11th, and the directors have every reason for believing that this department will prove advantageous to the company are set down in the accounts at £499,704, and the property and assets at the same amount. The report is of the greater interest, as the company is chiefly engaged in the rial trade and other rail way branches.

In the ed

in the accounts at £289,704, and the property is of the greater interest, as the company is chiefly engaged in the rail trade and other railway branches.

In the edge tool trade many of the Shefileld and district manufacturers continue to exprience a 200d demand. All kinds of joiners' tools, and various special articles, are selling very well for the Australian, Cape, Indian, and West Indian markets.

Such of your readers as may have followed me in your columns week by week will not be greatly surprised t) learn that a proposition has been put forth by the local colliery proprietors for the reduction of the miners' waves. This was enunciated at a general meeting of the members of the South Yorkshire and North Derbyshire Coalowners' Association (Limited), held at the offices, Sheffield, on Monday afternoon. There had previously been a meeting of the finance committee of the Association, which comprises Mr. Charles Markham, Staveley; Mr. C. T. Wright, Shireoaks; Mr. J. S. Smith, Sheepbridge, and other leading men of both counties. After a discussion of no great duration, it was resolved to make a reduction of 15 per cent. from the rate of wages of the whole of the underground workmen on and after the first day of the pay week commencing on or before April 14th next. The reduction was declared to be rendered absolutely necessary by the depressed state of trade. How the colliers will act in the emergency, of course, has yet to be seen, but if they are wise they will conform to the necessities of the situation, and accept the drop without resorting to a strike. A similar proposition, except that the amount of reduction then proposed was 10 per cent., was put forth by the colliery propietors in September last, but was subsequently abandoned, after several conferences between the parties interested. From 23,000 to 25,000 miners are affected by the proposal, and of that number 17,000 or thereabouts, are members of the South Yorkshire Miners' Association, of which Mr. Frith has recently been elected secretary, in place

### THE SCISSORS TRADE DISPUTES.

the 5 per cent. preference capital to a sum not exceeding 440,000."

The new work has allided to will be built be purpose. There will be stare what it is pecially designed for the smelting of hematite ore, and a large plant for making Bessement the and rolling rails. As soon as the company gets lie ore from Spain there will be no doubt of this step being rendered remunerative. Cleveland, as a district, is rapidly learning that the day of from rails is past.

TRADES OF SPAIN FIRE LID.

In the fron trade proper the transactions of of the past few days have not been of any magnitude to the propose of the exceedingly limited dimensions of such as me relaced. Prices, too, are cut very "fine" in the complain of the paucity of orders and of the exceedingly limited dimensions of such as me relaced. Prices, too, are cut very "fine" in deed, many offers being made at quotations and the principal sheffled works ship with boiler plates are still expected to the complaint of the paucity of orders and of the exceedingly limited dimensions of such as more freely inquired for, and at the principal sheffled works ship with boiler plates are still expected the control of the start of the principal sheffled works ship with boiler plates are still expected the complaint of the parties of the exceedingly limited by the principal sheffled works of the sort in hand, both for many plate department of the Allas and Cyclopa Works are still fairly busy, and, from what I hear, are long likely to remain so. The string respectively and the string of the principal sheffled works of the sort in hand, both for many plate department of the Allas and Cyclopa Works are still the string steadily produced. Even in these respects, the work of the sort in hand, both for many plates are still the control of the produced of the string steady to t

they say that in these cases the sizes and kinds are the least salable, and that the reduction as affecting the scissors trade is more apparent than real. The masters further state that the present is the worst possible time for making an advance. The German makers, having recovered from the Franco-German war, have resumed their work, and are now pushing Shefield manufacturers very hard—so hard that in several instances German-made scissors are even supplied to customers by Sheffield #rms. The scissors trade they say is decreasing, and if the new statement is agreed to—and the demands of the workboard hands, who will to-day apply for an advance, are also granted—the manufacturers do not hesitate to say that the Sheffield scissors trade must inevitably collapse. If the forgers and workboard hands go out on strike the masters say they will be compelled to supply their customers will German-made scissors. This would be a grave step to take, but they declare that they may be forced to it. Several manufacturers inform us that their men make from 30 / to 40 / a week, the forger having the higher wages.

"The men say that under the present rate

from 30/to 40/a week, the forger having the higher wages.

"The men say that under the present rate of wages it is impossible for workboard hands to make better than the following: Common filing, 18/to 20/a week; better filing, 20/to 25/a week. They admit that both in the case of forgers and workboard hands higher wages are made, but they say that these higher wages are not a fair example of the trade, being generally made by men who may work one week are made, but they say that these nigher wages are not a fair example of the trade, being generally made by men who may work one week and 'play' the next. They maintain that the application for an advance is justified by the fact that, in the case of workboard hands, the increased wages would not exceed 30 / to 31 / a week, out of which the workman would have to find tools. They meet the question of foreign competition by saying that Germany is a 'bogie' to frighten them. Before the dispute commenced they say they never heard about the Germans. One master complained of another underselling him in a certain size and kind of scissors. The men accounted for this underselling by the fact that the particular size was that which the manufacturer selected for his 'leading article'—i. e., a certain kind of scissors which he was content to sell without profit. If all the manufacturers had agreed upon the special kind of scissors to be made a leading article, the underselling would have been at an end; but as nearly every maker had a different end : but as nearly every maker had a different end; but as nearly every maker had a different article, there was nothing to prevent what was considered, in individual instances, a trade annoyance. One of the workmen told us that one employer showed him a dozen of German and a dozen of Sheffield made scissors. On inquiry, he states that it was found the Sheffield scissors hand had 7/per dozen of 14 for his labor; while the German workman had 8/6 for his dozen of 12—showing that the latter had 1/6 more for his labor, and two pairs fewer to do. Both the forgers and workboard hands Both the forgers and workboard hands state that they cannot continue at the present rates, and that if they are refused their application many of them will simply begin and make scissors on their own account, increasing the already long list of 'little manufacturers.'"

STAFFORDSHIRE AND BIRMINGHAM.

The trade in Staffordshire and the neighboring iron districts grows duller week by week, and, as a local correspondent puts it, the question is not so much how to make profit, but to avoid loss. There is hardly any demand for iron, no matter of what description or at what price. In sheets, quotations have been considerably brought down by the influence of the Belgian competition, especially in nail sheets, which are now at less than £9 per ton at the works. Further than this, common bars are £7. 10 in all cases where the size of the order warrants a departure from the nominal £7. 15/ to £8 for the common brands. The pig iron producers are firm as to quotations, but they are very largely undersold on their own doorsteps, so to speak, by the makers of other districts. There are now 68 furnaces in blast in Staffordshire out of 151 built, the present production being 40 per cent. below the average rate. The hardware industries are not briskly angaged. In most instances there is some work, but nothing approaching to activity. The jeweiry and birding gun trades are greatly depressed, and there is no great amount doing ngas fittings. The lock makers are busy, as also are such of the skate makers as are able to turn out wheel skates for the rinkers. Skating rinks are the rage. It is a madness destined to be very ephemeral. The trade in Staffordshire and the neighbor

SOUTH WALES AND MONMOUTHSHIRE.

The South Wales coal trade is growing very flat, and men are being dismissed on all sides. There is a good deal of talk of closing collieries There is a kood deal of talk of closing collieries rather than submitting to lower quotations. The strike of rail straighteners at Ebbw Vale against a reduction of 20 per cent. continues. At Rhymney a like dispute is threatened, as well as at Pontymoile Lower Mill. At Briton Ferry the mill men are out against a drop of 12½ per cent. The various tin plate works are very badly engaged. As is shown by the Board of Trade returns above, America is purchasing few lots of these goods, and France is not buying at all largely. It is said that Treforest last week obtained an order, but only at the considerable reduction of 2/6 per box. It is also stated that orders for iron on Indian account are now in hand. Last week 935 tons of iron were shipped from Cardiff and 1981 tons of iron from Newport, beside 17 tons from Swansea. The iron was mostly intended for Gothenburg, Sweden.

THE METAL MARKETS.

Sweden.

The METAL MARKETS.

On Monday copper was rather firmer, owing to the lowness of charters of Chill. Ten tons of Burra were done at 286. The was irregular, Straits at £22, 5 to £73, 10/ (at.elose) and Australian £72, 10. Soft eilver lead sold in builty at £21, 7/6. On Tuesday no business in copper, but a fair amount doing in this Straits at £72, 5 to £73, and Australian, £72. On Wednesday some Chill bars went at £76 and Burra at £96. The most in £72, and Burra at £96. The dull and quiet. Spelter at £24 to £74, 5 to £73, and Australian, £72. On Wednesday some Chill bars went at £76 and Burra at £96. The dull and quiet. Spelter at £24 to £74, 5 to £74, and Australian, £72. On Wednesday some Chill bars went at £76 and Burra at £96. The dull and quiet. Spelter at £24 to £74, 5 to £74, and 5 tons end of June £76. Lead lower. On Firday copper steadler and rather dearer, Chill bars at £76. 10/, and Wallaroo at £85, 15/6. This steady, 50 tons Straits being done at £72 to £72, 10/, and 20 tons Australian at £72.

Messrs. Henry Rogers Sons & Co.'s last circular remarked: "Ætreme depression prevalls in the metal trade, and all descriptions have falsen throughout the past month—the most severe depreciations being in copper, the and spelter. The very heavy fall in the value of a sever leight greatly curtailed, and lesceptices are forced down in the hope of flading buyers inclined to hold for a revival in trade. Copper.—The fall in this metal since the comperiment of the flavor of the lake is and if the mouth past and £74 to £74. Each of the severe depreciations being depressed alike. This reduction seems attributable to several causes: the undue price at which Chill bar copper has been kept on the West Coast for many months, owing to its being used so much more than formerly as a remittance—the heavy increase in the stocks of copper in the past month—the large through the past month—the

intensity of the distrust with which the future of copper is viewed. Opinions differ as to the prices at which this metal may ultimately settle down again when the present distrust is removed, but all seem to agree that just prices at which this metal may utilimately settle down again when the present distributs is removed, but all seem to agree that just now quotations must go lower before any revival can occur. There is, further, a growing belief that, taking into account the increase in the imports from Australia—the increase also of copper in the form of precipitate, and the now annual supplies of American Copper to the Continent—that our requirements are being more than provided for, and that we must not look to see even £80 as the ruling price again. Tin has fallen £8 since early in February, Stocks have increased very largely, and the depreciation in the exchange in the Straits has lowered the laying-down price here very considerably, added to which the demand for Tin Plates has fallen off to such a degree that common Cokes can now be bought at about 19/per box. Spetter.—Foreign spetter has decreased in value about 10/only, but some brands of English in second hands are so forced upon the market day by day that it is impossible to put any value upon them—the sales being made apparently with a view only of financial arrangements. Sheet Zinc has given way £2. Lead is 15/to 20/cheaper; the demand throughout February not being particularly active." throughout February not being particularly

way £2. Lead is 15 to 29 cheaper; the demand throughout February not being particularly active."

Von Dadelszeu & North say: "Copper is rather better, on the small charters being reported—900 tons for second half of February. There is more disposition to purchase Chili bars; £76. 10 / has been paid for g. o. b., and there are still buyers at £76. Wallaroo and Burra, in small lots, have been sold at £86. English quiet; tough, £84; select, £35; Indian sheets, sellers at £86. Tin has been steady at the reduced prices, and a considerable business done. Straits, £72 to £72, 10 /, and Australian, £71. 10 / to £72; Banca nominally 49/sfi.; Billiton, 456, to 45/sfi. The next Banca sale is advertised for the 28th inst., and to consist of 24,806 slabs. English rather irregular; smelters ask £77 for ingots, and £78 for bars, but lower prices are accepted. Tin plates remain very dull. Lead dull; £21. 15 / to £22; Spanish, £21 to £21. 5 /. Spelter flat; Silesian offered at £24. 5 /. Quicksilver, £10."

The Mining Journal remarks: "Copper.—On March 1. 1867, the total stocks of foreign and

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The Mining Journal remarks: "Copper.—On March 1, 1867, the total stocks of foreign and English copper in Liverpool, Swansea, London and Havre, afloat and chartered, from Chili and Aust a is to Europe, it is estimated, amounted to 18,910 tons, the price being on that date—Chili bars, £74; Australian, £84. /10; English tough, £81. Five years later the figures stood thus: stocks, 20,712 tons: Chili bars, £83. 10/; Australian, £92. 10/; English tough, £30. On Jan. 1 this year, stocks had riven to 35,000 tons, and a month later to 36,318 tons, the price of Chili bars being £81, as against £74, when stocks were 19,000 tons. The charters from Chili for the last half of February were announced at the beginning of the week to be only 900 tons—550 tons bar and 150 tons ore and regulus for England, and 200 tons bars for France. Quotations became firm, but the amount of business actually transacted was only limited. At the Swansea Ticketing 1000 tons ore realized an average of 15/5, Cape ores 15/7 per unit. The market for Chili bars on Tuesday became firmer, and there were at close rather buyers, £0. b., £76. On Wednesday a small parcel changed hands at £76. 10/; since which time the market has remained steady. English tough, £83; best selected, £84; strong sheets, £89; India, 4 by 4, £87; and yellow metal, 7½d. Tim.—A fortnight ago Straits tin was freely offered at £75. On the deliveries of foreign for the month being ascertained to be 1324 tons, and the stock, inclusive of parcels arrived but not stored, 6907 tons, quotations fell to £72. 15/ for Straits, usual cash, and Australian £73, 10 to £72, 10/, for cash and forward delivery. The market has been in a somewhat unsettled condition since; and, owing to Australian £73. 10 to £73. 10/, for cash and forward delivery. The market has been in a somewhat unsettled condition since; and, owing to the serious falling off in the demand for tin plates, is not likely to recover yet awhile. At the close, Straits tin is quoted at £72 to £73. 10/; and Australian, £71. 10/ to £72, usual cash. There is very little inquiry for English. Ingots are quoted £76 to £76 /10."

Latest Liverpool prices are these: Iron: 1. o. b. in Liverpool, per ton.

	£	B.	d.	£	5.	d.
Merchant bar	7	5	00	7	15	0
Merchant bar, in Wales	6	15	00	7	5	0
Staffordshire	8	0	00	11		0
Ноор		0	00	9	15	0
Shees	11	0	00	11	15	0
Nail rod	- 8	5	00	9	0	0
Bar, best crown	8	0	00	8	15	0
Boiler plates	10	0	00	12	0	0
					_	
Tin Plates: f. o. b. in	Live	erpoc	$\kappa$ , per	000	Ç.,	
Tin Plates: f. o. b. in	Live £	erpoc		€	8.	đ.
	£	8.	d.	£	8.	d.
Tin Plates; f. o. b. in Charcoal, I. C	£	8.		£	8. 8. 3.	d. 0 0
Charcoal, I. C	1	5	d. 0 @ 0 @	£ 1 1	8. 8 3.	d. 0 0
Charcoal, I. C	£ 1 1 Live	5	d. 0 @ 0 @	£ 1 1	8. 8 3.	d. 0 0
Charcoal, I. C	£ 1 1 Live	5	d. 0 @ 0 @	£ ton	8. 8 3.	d. 0 0
Charcoal, I. C	£ 1 Live £ 97	8. 5 1 rpoc 8.	d. 0 @ 0 @ ol, per d.	£ 1 1 ton £ 0	8. 8 3.	d. 0 0 0 0 0 0 0
Charcoal, I. C	£ 1 1 Live £ 97 90	8. 5 1 rpoc 8.	d. 0 @ 0 @ ol, per d. 0 @	£ 1 1 ton £ 0	8. 8. 3. 8.	d. 0 0 0 0 0 0 0 0

### Chicago Sewage Outlets.

The Chicago Times says: The question of sewerage has become an interesting and absorbing one around Chicago. With the growdensity of population, on an almost level plain, but a few feet elevated above the water

lengths from the shore to the outer mouth and when no more can be forced down after dredging out between the two sides thus formed; then bolt the two tiers of piles to gether firmly over the tops of the last plank, and also put braces across the two sides, and you will then have formed an outlet to your sewer that will let out all the water that is presented to it, which neither waves nor frost can move, and which will cost nothing per annum to keep it clear.

It would be best to continue this outlet far enough into the banks of the shore, so that in no event could the masonry ever be exposed to the waves.

In constructing a sewer at a lower level than the lake, it becomes a question whether it cannot be more easily and economically done by making it with rerpendicular sides, arched over the top; but to have the bottom flat, and constructed of oak plank laid crosswise and doubled, and which, being always submerged, would never rot.

There are many low places that need to be drained where it may be better to use box drains than to construct sewers; and if so, an invention is needed to dredge out such drains, and also for constructing sewer outlets, as above indicated. It might be a flat-bottomed scow, eight or ten feet wide, with an endless chain and elevator buckets at the bow to be run by steam, which would excavate to the same depth, and carry both sand and water to a discharge box above, from which it could run out on both sides of the banks of the ditch thus formed. Such a machine, properly constructed, could be started in at the lake and work its own way as far as desired, and would be especially useful in constructing slips between Calumet River and Calumet Lake. We look for some Yankee to come along with such a machine some day. It could not vote, to be sure, but it would do more ditching than a hundred voters, unless they could swim and dig too.

#### An Extraordinary Electrical Phenomenon.

One of the great benefits resulting from the study of physical science, is that it enables us to explain a great many curious things for which it would have been difficult to account a few years ago. The Dayton (Ohio) Journal, thus brings high science to bear in explaining how the bell of a locomotive came to be cracked. Tyndall could not do it better; indeed, we doubt if he could begin to do it as well:

The cracked bell of the engine S. P. Chase has been noticed by all who live within hearing distance of the Atlantic and Great Western Railroad. Beneath harsh and rugged exteriors incidents of deepest pathos are hidden. The bell of the S. P. Chase is a vivid illustration. Once, and but a few weeks since, its tones, so discordant now, were the most mellow and musical on the line. The story is simple, short and affecting.

One of its engineers had been charmed with the vision of a lovely girl along his route. He made her acquaintance, and there was every prospect of its happy and prosperous termination through life. One day the engineer was gradually slackening up at the depot of the town in which she lived. Several unforseen events had prevented him from seeing her for nearly a month. A church bell of the-town was chiming merrily, and a wedding party entered the depot. As the bride drew near to enter the car the engineer, who was holding the bell rope, suddenly gasped for breath. The hand holding the rope grew stiff and rigid. What followed he did not know; his first consciousness was when the fireman emptied over him a bucket of water. His right arm felt numb and sore, and when the train started the bell gave forth that flat sound which now distinguishes it: subsequent examination showed it to be cracked.

Just how it came about has not been satisfac torily explained. The most plausible theory, entertained by the railroad men generally, and by the engineer himself, is that when he saw the bride, who was the girl previously men-tioned, the shock that followed possessed some of the properties or electricity. The subtle fluid, by some fortunate mischance, entered his of time and labor necessary for the purpose." right side, and instead of rending his heart. which was not located there, it passed along D. R. MILLER LOCK CO.. the rope to the bell and cracked it. The numb ness of his arm and the sensations, as he remembers them, go to sustain this hypothesis, which, if correct, suggests also that love, so long a puzzle to the profoundest philosophers, is made up in great part of electricity, some force not unlike in its nature. Be that as it may, the engineer retains this bell as a re minder of his own narrow escape. He has foresworn faith in women entirely, but the tones of this beil, so hard and grating to the ears of others, are never heard by him without fervent gratitude when he recalls how nearly he was himself becoming still more flat and

### French Engineering Projects in Africa.

The vast engineering project of filling a de pression in the Sahara Desert by allowing the entrance of water from the Mediterranean, is

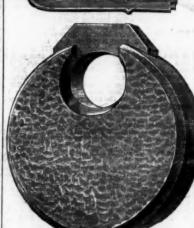
still discussed in the French scientific journals. Mr. Houvyet remarks, in a communication to the French Academy, that it will not be difficult to establish this sea-the problem as how to keep it. Supposing the sea to be established by means of a canal there must be an enormous quantity of water lest by evaporations. The water evaporated being replaced by a supply coming through the canal, the whole body will soon reach the maximum of saturation. The evaporation still continuing, a deposit of salt will be formed, which in time will fill up the whole space of the interior sea, the ultimate result being simply the accumulation of an im-

The advocates of the project are very strongly of the opinion, however-based upon the mos painstaking and protracted investigations by eminent experts-that the presence of this water, and its evaporation, will produce copious rains, which will, in a great measure, return into the sea, and not only accomplish the object referred to, but also convert what is now a sterile waste into a fertile country.

The last is doubtless true to some extent, but the resulting modification of climate should be regarded with apprehension. The great desert performs no unimportant part in preserving the climate of the adjacent countries in their present state. Reduced in temperature as it would be by the creation of a considerable inland sea, we should expect that the tempera ture of southern Europe might be seriously affected. Any scheme which tends to seriously change any considerable surface of the globe is likely to produce climatic changes of importance in proportion to the works causing them. and in many cases these changes are not of a character to be desired. For a familiar example, the denudation of large areas of forest land has completely altered the character of streams and rivers flowing through them. This it has done, not by changing the amount of the rain fall, as is popularly supposed, but by altering the character of the soil, and by allowing the water to drain rapidly into the rivers instead of being retained for a long time upon the water shed to be gradually parted with.

Plating Copper and Brass .- It is said that these metals may be plated with bismuth in a bath composed of 25 or 30 grammes of amnoniacal chloride of bismuth per liter of water, slightly acidulated with hydrochloric acid, operated cold. If heated to 100 degrees the bis nuth will not deposit. A single Bunsen cell only is necessary; with a single Daniel cell the deposit is long forming, and but slight. On coming from the bath the articles are covered with a dark deposit, under which is the bismuth, with its especial brilliancy, and adhering strongly. By substituting the double chloride of antimony and ammonium, antimony may be similarly deposited.

In working up the precious metals great care s used to save all the sweeps and debris. Gold beaters, working jewelers, and others who operate on these metals, after washing their hands, filter and save the deposit; their garments even, which accumulate fragments and dust, become valuable, and, when cast off, are burnt for the gold that may adhere to them. Old gold and silver thread and bullion of all kinds is bought to recover the metal. Mr. W. Chaffers, in his work on hall marks, thus speaks of the recovery of the waste and sweep of the precious metals in the Royal Mint : "The sweep is composed of cinders or dust from the forge. the sweepings of the workshop, broken crucibles, the dross which adheres to the ingots of metal after fusion, and of every waste which can possibly contain minute particles of gold and silver, which had escaped the notice of the workmen, or had become dispersed and lost in the manipulation of the metals. The sweep is washed over a fine hair sieve, and the more perceptible portions of metals separated and refined, but the remainder, called by the French les regrets, yet contain impalpable particles, and is usually soid to persons who have the necessary utensils and appliances, and who by means of mercury mills, above the size of a coffee mill, burning it in the crucible, and by the employment of fluxes of saltpeter, &c., are able to extract whatever metal may remain; it is then capelled to determine the proportions of gold and silver eliminated in the process. In large establishments the waste and sweep form considerable item; we may especially notice the coinage operations at the London Mint. The large gold coinage which commenced in 1871, and was finished in June, 1873, amounted to £24,500,000 sterling. The value of the metal actually deficient during the operation was £3826. 7/10 or £156. 7/3 per million; the sweep, weighing more than 26 tons, was sold for £2414. 10/. The loss, therefore, was £1411. 17/10, or



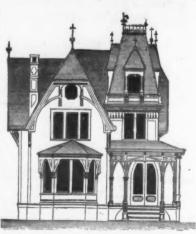
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6 Side Elevation, Sections and Attic Plan.
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6 8 Side Elevation, 1st and 2d Floor Plans of a Two-Story and Mansard Roof Homestead with 9 Rooms and Bay Windows at front and side.
6 9 Front and Rear Elevations.
7 10 Front and Side Elevations, Section and Plan of Chamberlin Library.
8 11 Front and Side Elevations, Section and Plan of Chamberlin Library.
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9 14 Side Elevation.
9 15 Second Story and Attic Plans.
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10 17 Side Elevation and 2d Floor Plan.
11 9 End Elevation and Plan of Wayside Chapel, with Catharine Wheel Window, erected near Nyack, N. Y.
11 20 Elevation and Section of Entrance, Front and Side Elevation of Hood.
12 Perspective View and Plan of Bell Cover.
13 21 Elevation, Side of Porch and 1st Floor Plan of a Dwelling with Tower, Bay and Dormer Windows.
14 25 Perspective View of Plan of a Dwelling with Tower, Bay and Dormer Windows.
15 26 Elevation and 2d Floor Plan, with Dormer, Bay and Oriel Windows, Tower and Carriage Porch, Sec.
16 30 S. W. Elevation.
17 Side Elevation and 2d Floor Plans.
18 21 Side Elevation and 2d Floor Plans.
19 21 Side Elevation and 2d Floor Plans.
20 21 South Entrance Elevation.
21 21 Side Elevation and 2d Floor Plans.
22 21 Side Elevation and 2d Floor Plans.
23 22 South Entrance Elevation.
24 31 Second Floor Plan, showing Roof of Plazze, &c.
25 26 Elevation.
26 27 Side Elevation.
27 Side Elevation.
28 29 Front Elevation.
29 N. W. Elevation.
20 20 Side Elevation.
20 21 Side Elevation.
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26 27 Side Elevation.
27 28 Elevation.
28 29 Front Elevation.
29 N. W. Elevation.
20 20 Side Elevation.
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10/. The loss, therefore, was £1411. 17/10, or £57. 12/5 per million. It was considered by the authorities at the Mint, that if the operation had been conducted there, the sum realized would not have compensated them for the loss of time and labor necessary for the purpose."

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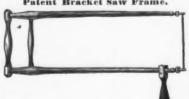


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and index to Advertisements. Alarm Whistles and Speaking Tubes,
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Lindenaer John, 249 Pearl, N. Y.

Osborn Mrg. Co., 79 Bieceker, N. Y.

Bit Braces Manufacturers of, Millers Falls Mrg. Co., 78 Beekmaa, N. Boiler Felting, Radeliffe S., 206 West, N. Y.

Bora N. Barax.
Pfizer Chas. & Co., New York......
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Frams Buttin. Miders of
Tiebout W. J., 20 Pearl, N. T.

Annoin Bress Manifacturers of.

Annoin Bress Manifacturers of.

Annoin Bress Works, 53 and 56 Holliday.

Benedict & Vose 99 Chambers, N. Y.

Bridgeopt Brass Co., 23 John, N. Y.

Davol John & Sons, 100 John, N. Y.

Plower Brass Co., 23 John, N. Y.

Helckor Mfg. Co., 239 Pearl, N. Y.

Manha'tan Brass Co. 38 Reade, N. Y.

Hiller Edw. & Co., 289 Pearl, N. Y.

Manha'tan Brass Co., 38 Reade, N. Y.

Hiller Edw. & Co., 4 Warren, N. Y.

Helmer & Atwood Mfg. Co., 80 Chambers, N. Y.

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Hiller Edw. & Co., 4 Warren, N. Y.

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Hiller Edw. & Co., 4 Warren, N. Y.

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Ray Miller Mfg. Co., 90 Barelay, N. Y. and 96 John,

Bridge Brass and Roof Co., 5 Dey, N. Y.

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Union Mfg. Co., 99 Chambers, N. Y.

Union Mfg. Co., 90 Chambers, N. Y.

Union Mfg. Co., 91 Chambers, N. Y.

Union Mfg. Co., 181 Muloerry, N. J.

Chemics, Jan Physical instruments. Taylor Iron Works, High Bridge, N. J.
Casters. (Furulture)
Toler John, Sons & Co., Newark, N. J.
Chemic 11 and Physical Instruments
Hall & Harbeson, 191 Greenwich, N. Y.
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Mack & Co., Rochester, N. Y.
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Cass: Ul. N., Fredericktown, O.
Curry Combs. Manufacturers of.
Cass: Ul. N., Fredericktown, O.
Curry Combs. Manufacturers of.
Boker Hermann & Co., 101 and 103 Duane, N. Y.
Cass: Ul. N., Fredericktown, O.
Curry Combs. Manufacturers of.
Boker Hermann & Co., 101 Duane, N. Y.
Cass: Ul. N., Fredericktown, O.
Curry Combs. Manufacturers of.
Boker Hermann & Co., 101 Duane, N. Y.
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Yaie Lock Mfg. Co., 280 Broadway, N. 1

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Bliss & Williams, 188
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Spencer A. H., '28 Strie Boston, Mass. '28
Spencer A. H., '28 Strie Boston, Mass. '28
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Richards T. C. & Co., 'A Nurray, N. Y. '3
Ficture Nails, etc., Monnfactureray, R. '38
Richards T. C. & Co., 'A Nurray, N. Y. '39
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Barr Edward, '85 John, N. Y. '36
McNeal John, & Son, Barlington, N. J. '36
McNeal John, & Son, Barlington, N. J. '36
McNeal John & Sons, Barlington, N. J. '36
McNeal John & Sons, Barlington, N. J. '36
McNeal John & Sons, Barlington, N. J. '36
McNeal John & Co., '80 Hinter, N. Y. '36
McNeal John & Sons, Barlington, N. J. '36
McNeal John & Co., '80 Hinter, N. Y. '36
McNeal John & Co., '80 Hinter, N. Y. '36
McNeal John & Co., '80 Hinter, N. Y. '36
McNeal Sons, Millburry, Mass. '3
Mack & Co., Rochester, N. Y. '36
Mack & Co., Rochester, N. Y. '37
Mack & Co., Rochester, N. Y. '37
Mack & Co., Rochester, N. Y. '38
Plated Warp
Derby Stluterials, Monnfacturers of
Ballimore Bell and Brass Works, Sa and S5 Hollid
Rochester, N. Y. '38
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Peck Millo, New Haver, Conn. '40
Peck Millo, New Haver, Conn. '40
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Prans, Cole Cont. '40
Pumbers, Makers of, Wildle, W. '80
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Grundy & Kenworthy, 165 Greenwich, N. Y.
Loring Samuel, Plymouth, Mass.
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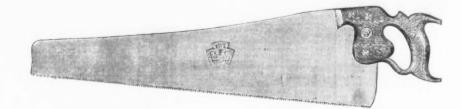
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# Keystone Saw, Tool, Steel and File Works, HENRY DISSTON & SONS,

Front and Laurel Streets, Philadelphia.

### "CENTENNIAL No. 76."

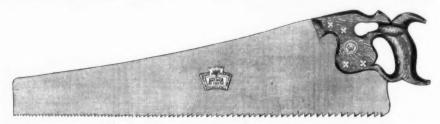






This Saw is ground on the back, to taper gradually from butt to point, being only 26 gauge at the point. By this mode of grinding, the Saw, when tested, makes a complete "whip bend." The handle is apple-wood, oil finish, the screws are flush and polished, and the Saw is superior to any ever offered to the trade in this or any other country at the price. It is the sweetest-cutting, nicest-hanging Saw that can possibly be manufactured, feeling as light as a feather at the point, owing to its peculiar construction. The screws are finished before being put into the handle, and, should they become loose, can be readily tightened with an ordinary screw-driver, and still make a good finish.

### ACME No. 120.

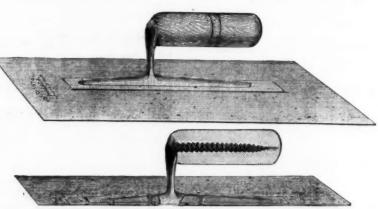


We present to the trade this week a cut and description of our Acme Saw No. 120. This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important improvement is the hollow or skew-back, the success of which can best be attested by the number of these Saws that has been sold this month—two hundred and sixty-three dozen have been ordered since March 1st by letter, as our stock orders for the spring trade were nearly all in before that date.

The No. 76 formed the bulk of these orders, but the fact of the above number of the Skew-Backs having been sold in three weeks, taking into consideration the depression of business, is sufficient to prove that it is bound to supersede all other saws.

The peculiar shape of the butt or heel of this Saw (No. 120), coupled with the new method of fastening to the handle, gives a full stroke of the blade without fear of catching or hooking in the work; and as the handle is put further on the blade you have a full stop at the proper point, and a greater command over your saw, by reason of being two inches nearer to the point which must give more power. The new handle is complete, and so constructed that it makes the easiest feeling handle imaginable, and one that will not wear hard places on the hand.

The saw being let into the handle on a circle has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

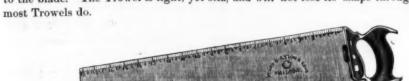


SECTIONAL VIEW.

### PLASTERERS' TROWELS.

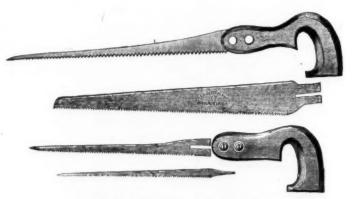
The attention of Plasterers is called to the above cuts of our new Plastering Trowel No. 0, for which we have received Letters Patent of the United States, dated April 20, 1875.

We warrant this Trowel to be superior to any other in the market, and guarantee it to give entire satisfaction. Our improvement consists in making a Plastering Trowel with a central longitudinal rib, giving thereby additional strength and at the same time allowing the use of rivets with larger heads, thus securing the mounting more permanently to the blade. The Trowel is light, yet stiff, and will not lose its shape through friction as



### THE COMBINATION SAW.

The Combination Saw, which we illustrate herewith, is an article which fills a long falt want: it combines five tools in one, each tool as light as any one of the tools in separate form. This combination being made entirely of metal, and put together with metal, is always firm and true. No shrinkage can affect it. It is the most complete weather board Saw in the world, and with our little Pocket Level it presents a complete Plumb and Level, a Hand Saw, a good Square, and Rule.



### COMPASS SAWS.

Our new Compass Saw is a great improvement on the style in common use—with it the operator need not bring his hand in contact with the saw blade when extra power is required, as provision is allowed in the handle for two full hand grips. They are cheaper than common Compass Saws, when you consider that broken blades can be renewed at a small cost, whereas in the old style, when the blade is broken, the whole tool is useless. We advance one size in price for our New Patent Handle, i. e., for 10 inch blade and new Handle, we charge 12 inch price. The blades are sold in nests, or separately, and are interchangeable.



### NEW PATTERN BACK SAW.

The recess on the side of the handle to admit the thumb is a a grand improvement, us the hand is not cramped, but feels very comfortable.

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Hudson's \$7.75 \$ dog	Union Mfg. Co Figured Enamei Nickel Plated Boston Finish, F
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Sargent & Co.'s	Drawing Kn Crossman's No. 1. Douglass, Extra.
Q. S. Backus	Hart Mfg. Co., No Merriii Nobles Mfg. Co
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* framen dis socio 5 Camano Bail (American)	Drills and Dr Blacksmiths Self-I Breast P. S. & W.
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825-25 \$29-75 \$31-25 \$38-75 \$43-25 \$48-90 \$54-00 Butts	Morse's Beach Pat
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20 % 15 % 15 % 25 % lery	Stephens'   dis 60&10 % dis 50&10 %   Stephens'   dis 50& 10 %   Stephens'   dis 50& 10 %   Stephens'   dis 50& 10 %   dis 5
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k5 s cash	" 2,2½ & 3. 4 75 " dis
10 % 10 % 10 %	New England, same list as B. & A. Flint
20 %	Silver Lake, Russia Flax.   \$\Pi\$ 55c
10 % 10 % 10 % 10 % 10 % net	Sash Lecks   Ciark's Nos 1 and 2, \$10'00 per gross   dis 35\% 5   Ferguson's   dis 35\% 5   Norwich   dis 25 & Walker's   dis 25 &
90 % 15 % 10 % net	New England
net 20 % 45 % 20 % 20 %	Star   Weem \$3 26
20 % 25 % 25 %	Spear & Jackson's   \$3 50 to £ gold
40 % 40 %	H. W. Peace's Circuiars
40 % 20 % 25 % 20 % 25 %	# Buck Saws (Cross Bar) per doz \$850 sillet Webs per doz 600 # Pruning dis 4025 \$ Wheeler & Clemson Mfg. Co's Hand dis 15 \$
25%	L'vingston's Butcher and Kitchen
ash	Stillman's Genuine
5 % 5 %	Nash's. No. 1, \$8°50; No. 2, \$3°50 dis 20c. 0 \$   Hammer, Hotehklas. \$5°50 dis 10 \$   Bemis & Call's. dis 20 \$   Alken's Genuine. \$14°80 dis 40 \$   March
5%	Scales.   Haton, Counter   P doz \$36—dis 25 5
N N N N N N N N N N N N N N N N N N N	Brown's         dis 2565 g           Fairbanks         new list dis 15 @ 20 g           Howe %         dis 1565 g           Chatillon's Grocers'         dis 25 g
202	Universal Family
2 %	Scrapers.
0 % 5 % 5 00	Ship (common)   per doz \$\$ 00 net
0 % 0 % 0 % 0 %	Eureka   dis 20 g
net net	Roung Head Iron " Am. Sc. Codia 40 %
ist	Reund Read Brass and Silver Capped, 'List March 1, '75dis 40 g Brass and Silver Capped, 'List March 1, '76dis 60 g Coach, Patent Gimlet Point, List Jan. 1, 1875dia 50 g Bedlist not
5%	Japanned, List of Plain Screws of Sept. 1, 1875. d. s. 15 g Machine—Fias Head, Iron, List Jan. 12, 1875. dis 25 g Brass, dis 15 g Round Head, Iron, dis 20 g "Brass, dis 20 g dis 20 g
net 0 %	Flat Head Brass
et	
0 % 0 %	Hand Rail, Sargent's
38	Jack—Bell   Scythes   dis 156   Scythes   Blood's German Steel, Grass \$\vec{v}\$ doz \$10 00   dis \$1:50   Sliver " \$\vec{v}\$ doz \$10 00   dis \$1:50   from list   German " German " doz \$16 00   from list   German " \$\vec{v}\$ doz \$15 00   from list   German " \$\vec{v}\$ doz \$15 00   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   German " \$\vec{v}\$ doz \$15 00   dis \$1:50   from list   dis \$1:50   dis \$1:50   dis \$1:50   dis \$1:50   dis \$1:50   dis \$1:50   dis
5 %	Silver Clipper   18 do   From list.     Salver Clipper   18 do   From list.     Wadsworth's Grass   dis 30 s     Bush   dis 20 s     Sevthe Snaths   dis 25 s
ist ist ist	Cast Stoel
× ×	mers. dis 40 % Seymour's Straight Trimmers. dis 40 % Seymour's Straight Trimmers. dis 50 % Hand Straight Trimmers. der doz \$10 00-dis 50 % Barnard's Lamp Trimmers. der doz \$27 doz \$275
-	Post with the 14

		THEIRON				8:
Sheaves. Sliding Door, M. W. & Co. list	METALS.	16 Per cent	1:45 Zinc Wt	tite, American No. 1 dry ii, In off. French (Paris) ii to off.	.9c	GІлая,
" B. & E. Hst	HON. DUTY Bars, 1 to 1% cents per lb., Sheet, Band,	MISCELLANEOUS. Common Plain Brass Pail Ears	***************************************		Sir Sizes.	ngle Thick.
Tatent Roller   Hattlelo's   dis 25	none of the above from shall pay a less rate of duty than 35 per cent. Fig. 47 per ton; Polished Sheets, cents per lb.; Wrought Serap, 88 per ton; Cast Serap, 46 per ton. Kaliroad, 70 cents per 100 lbs. Boiler and Plate. 1% cents per lb.	Hose Pipes, 500 and over	71 Linseed	Raw		\$11:00 \$10:50 \$10:00 \$9
Shovels and Spades. Ames Ames dis 201	*6 per ton. Railroad, 70 cents per 100 lbs. Butler and Plate. 1% cents per lb.			Crude	11 x 18 to 14 x 24	13°50 12°50 11°50 10° 14°00 13°00 12°00 11°
Gowiand   Gowi	Foundry No. 1	Gliding, 20 cents. Turnings, Filings and Chips, half the p Orders for Goods on this list receive	orice of Scrap.	Crude obl. 1 Winter unbleached obl. 1  Bleached 1  Bleached 2  tra Refined.	90 22 30 to 15 x 38	1850 1650 1450 13 1850 18 00 16 00 20 50 19 50 17 00
C. E. Jennings & Co	Cotness Storcs Store	date, will be filled at the rate herein st Terms—Net cash. No discount allo	ated, Lard, Pu	re Winter.	15 24 x 36 to 24 x 40. 24 x 42 to 28 x 42. 26 x 46 to 30 x 48.	25:50 22:50 20:50
Shove is and Tongs.	Cliengarnock	ANTIMONY	16% @ 17c. gold Westsfor	Southern Yellow	3 x 50 to 32 x 52. 32 x 54 to 34 x 56.	25.00 25.00 23.00
Polished Steel	_Am. Renned, st mill24c.	Day to Thom and Change 12	lb. Natural			31:50 29:00 26:00 85:00 82:00 29:00 uble Thick,
	I KHIIM.		6% gold Asphaltt 6% a 7c gold Benzine.	m	Se SIZES.	I, II. III. IV
N. Y. (740). 4 3750 B. & B. Club. 4 3750 All Clamp 4 25 1 Rink. 800 Florence Steel. 81 0 dis 25 5	Wrought Scrap " 31 00 @	Pipedis 10 %		egal.  ock Ann. ass't cans, lo-,c., kegs. English lie;	9c 11 x 14 to 12 x 16	21:00 19:50 18:50 17:
" All Clamp 3:50 dis 30 g		Sar	(11m. 197)	The state of the s	C TO SE ON AN AN A GALLES AND	32:00 30:00 25:00
No. 1. Bluedper pair \$5.00 No. 2. Nickel Platedper pair 6.00 No. 3. "extraper pair 8.00	teined from.  * to 2 in round and square 65 to 66 57 50	A., 25c.; B. 20c; C. 15c.; D. 12c. * b.	Glaziers'	ret. S 6 4 Points, Zinc. ppai	14c 22 x 30 to 15 x 38 5 c 20 x 34 to 22 x 36 5 e 24 x 36 to 24 x 40.	34°00   32°00   28°00   37°00   34°00   30°00   32°00   32°00
No. 2, Nickel Plated	1 to 6 in, x 34 to 1 in 4 50 00 00 52 50 1 to 6 in, x 34 and 5-16 60 00 06 62 50 Shafting Iron—234 to 4 in 60 00 06 65 (0	WTEEL DETY: Bare Ingore Shorts	and Colls, valued Sh	mar. ellac, English	16c 24 x 42 to 28 x 42 15c 26 x 46 to 30 x 48 15c 30 x 50 to 32 x 52	44:50 40:00 36:00 46:50 42:00 38:00 48:50 44:50 40:00
Plated	Rods-3-10 to % round and square   65 00 60 110 (d)   Bands   70 00 @ 72 50   Hoops-% to 2 in   73 00 @ 120 00	not above 11, 3 cents per lb. over 11,	over? cents, and 3½ cents per lb. ents per lb. Rail. Pumice S	dark 9  Stone, selected Lumps 9  powdered, fur bladders tulk 93  tulk 93  tone, soft, English 93  repentine 95  Stone should 4	de 32 x 54 to 34 x 56	55:00 50:00 46:00 55:00 50:00 46:00 60:00 55:00 52:00
Slates. pare Frames, Round Cornered, by casedis 65&10% Less than a casedis 65%	Swedish Iron. Ordinary sizes	way Bars, in part Steel, I cent per lb.  Metal cemented, cast or made from I mer or pneumatic process, of whate scription, shall be classed as	Provided, that ron by the Besse ever form or de	powdered,	4c Sizes above—\$15 per be c Discount 60& 10 60 60& 11	ox extra for every 5 inches.
Spoke Shaves. new list die 25 c	Sheet Iron.	American Cast Ste	Rotton S Spirits T Whiting	tone, soft, English	All sizes above 52 incl more than 81 united inc united inches bracket.	hes in length, and not making thes, will be charged in the An additional 10 per cent, w
enance actains  on. dis 38½&10 %  ood. dis 30 4  dicy's. dis 25&10 %	1 1034 " 40 Dic Dic	Too. Spring Homogeneous Tre. Machinery (round and square).				
Spoke Trimmers	199 et Ania Ca Elica	Machinery (round and square)	12½ @ 13½e	PRATT	T, oc C	···
inante.	alvanized, 14 to 20, prime, # B 8%c; 2d quanty # B 7%c	Sheet		rdware & Iron Me	erchants, B	uffalo, N. Y
nned Irondis 10 %	10%c 9%c	Chrome Steel.	18 @ 30c	Manufacturers of	the Superior Brand.	
Sting		Tool. Tool, extra fine Spring.		BUFFALO FORG	ED HORSE	NAILS.
gers & BrU, A	One piece Corrugated Sheet Iron Elbows.  CHAROOAL IRON.	Tool, extra fine. Spring. Machinery. Hammer. Gun or Homogeneous.	15c, These	Nails are superior, being made with new and ds of Norway I ron.	improved machinery and ac	ctually hammered from the ver
man Silver	16 5 55 65 6 7 Inch. \$250 350 450 525 650 per doz.	Best Cast	39 B 173/c			
reas from From the fr	\$5.00 7 NO 9.50 12.00 14.00 per doz.	Extra Cast. Round Machinery, Cast. Swaged, Cast. Best Double Shear.	· · · · · · 19560 1			
* dane.  ndostan Stone	tents & b. Manufactured (including all articles of which copper is a component of chief value) 45 % ad	ti Old soulities	14%0			
Silps.   W 10 10c     nd Stone.   W 15 6c - dis 20&10 ¶   ashita Stone.   No. i, W 15 30c net		de 2d quality	" 10½c 9½c	景 麗	157	
nd Stone. \$\psi\$ 100 500 10 \$\psi\$ 10 100 10 \$\psi\$ 10 \$	BIRGHSD SHEATHING, BRAZIERS COPPER, BOLTS, &O. Braziers Copper, ordinary fizes, over 16 oz., per square too	Sheet Cast Steel, 1st quality " " 2d quality " " 3d quality File Steel, Flat and ½ Round " Square and Round				
Slips	square too. 32c % h Brazlers Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot. 34c. " Brazlers Copper, 12 oz. per square foot. 36c. "	File Steel, Flat and ½ Round	" 12%c " 12%c 13%c			
itove Polish. # gross 6 00	Hraziers Copper, 12 Oz. per square 1001	" Mill. " Taper to 4 inch. " Taver 3 and 3% fnch.	" 16c			
M	Locomotive Fire Box Sheets	SPELTER-DUTY: in Pigs, Bars a per 100 lbs.				
dis 50 %; full cases, dis 50&10 %   dis 50 %; full cases, dis 50&10 %   dis 50 %; full cases, dis 50&10 %	" 12 oz. # 3g. fl. and ughter 3dc. " Bolt Copper Szc. " Copper Hottoms. 3c. # b net No Copper is Sheathing except 14x48 nches. and not to exceed 34 oz. to the square foot.	Silesian, cash				
		per lb.: Electro-galvanized Plates, Manufactures of, not epum mat. 1, 35 Bars, Blockand Pigs, free. Banca, sul	pe' cents per B; pe' cent. ad val.	5		
ston's Try Squares No. 1	Case	per cent.	@ 27c., currency	6		
nterbottom's Try and Mitredis 20&10 7	For tinning both sides, double the above amount.	English	b 22c., currency	.7	8	
ks, Haif Weight, American die 75& Full 018 51& Haif Swedes die 5&	14 and 16 oz. and heavier Sic. By the case 28c. W w	1 C 10x14. Prinie Charcoai		rders solicited from the Trac	9	
Full " dis 30& dis 10 & Carpet, Am. and Swedes dis 10& for cash Leather Head dis 10&	12 oz. and lighter	1 X 10x14, " 12x12, " 14x20, "	11:25			19
" Leather Head dis 10% " Copper # 5 45c. dis ads, Half Weight dis 50%	(And all sizes not over 20 inches wide.) 30x60  [4 and 16 oz. and heavier	D C 12½x17 " D X 12½x17 " For each additional X add.		G. B. WALBRIDGE &		
4-Sths and longer, 9c.; 3½-8ths, 9½c. & B, dis 10 % nnk, Clout and Finishing Nails—  2 2 1 1½ in. and over.	12 oz	CORR TIN PLATE, Best. 2d Qualif	v. Ordinary. Fran	cis Axe Co.	1	George Washington'
% % % % 1 1% in. and over. 25 2) 17 15 13 11c. ¥ m. dis 10 € table Pointed Tacks	Brown & Sharp's Gauge the Standard except for Fine Wire.	I C 10x14 \$5.00 7.75 I C 12x12 8.50 8.23 I C 14x20 8.75 8.25	7·25 @ 7·50 7·75 @ 8·00 7·25 @ 1·75	ffalo, N. Y.	1	MATCHETC
rmor and Ring	BRASS MANUFACTURERS' PRICE LIST. October 27th, 1875. Net cash orices for Roll and Sheet Brass, Wire, &c., for	TERNE PLATE. Prime Char. 20 quat. I C 14x20 48'00 7'50 @ 7'75	Coke.	10000000000000000000000000000000000000		HATCHETS,
terprise Mfg. Codis 20 % Tapes, Measuring. terican Flask and Cap Codis 20 %	quant" les of 130 pounds and over at one time. For less; n 100 pounds, three cents additional. HIGH BRASS	1 C 20x2316:75 @ 17:00 15:75 @ 16:25	15:25 @ 16:75	d Edge Silver Steel	/ B	erch Axes, &c.
dy's	All Nos. to No. 28, and widths 14 in. and under	1 X 86x28 22·50 f C 20x200 22·00 I C 14x20 M F. Brand		IXES.		Orders Solicited.
Thermometers. a Case	20 in., inclusive	ZIACDUTY: Pig or Block, \$1 50 per 24c. W b. Sacet.	100 lbs. Sheet	×		
For Calks.	All Brass thinner than No. 38 is Platers' Brass. at45c Sheets 24x48 in. and all sheets cut to particular sizes		open 10%e	HAMPION	" IMP	ROVED
pod Bottom per doz \$12—qis 30&10 % I Iron per doz \$19 50—dis 30&10 %	P.Inters' Rules. 40c Sheets wider than 30 in and under 40 in 40c " 40 in. and over 42c	Paper Stock, Old Me			_	
Finners' Tools and Machines. S. & W. dis 10 5	Circu ar sheets, in diam. from 4 in. to 14 inclusive3°c over 14 " 20, "40c	Canvas linen	6 @	🖰 Ice Crear	n Freez	70r
Praps.  me, Newhouse	30 40, 546c	White linen rags, No. 1	AVG	/ IUU UI UAI	11 11002	.01.
use, Wood Choker # doz holes, 15 @ 16c	Four cents * b more than High Brass. Gilding Metal, 7c, * b more than High Brass.	Colored	25 6 34		Not the CH	HEAPEST, but
Nut Co.) w doz holes 16 @ 18c net	Platers' or Gold Metal Sawed	Jute Butts	214 @ 234	W- EE		
Round, Wire	FOR BLITTING.	Kentucky bagging	1 @ 41/6		lile	BEST.
roweis. hrop's Brick and Plasteringdis 10 % non's Brick and Plasteringdis 15 %	Metal, in width 2 in. to 1 in., thinner than No. 30, 2c. per	Rope cuttings. Kentucky Baie rope. Oakum junk, No. 1.	4 60 416	THIRD BALL	FOUR STYLES-	-FOURTEEN SIZES.
e's Brickdis 20 4	advance.	Grass rope			GEARED	FREEZERS.
iendis 25 %	Metal, in width 1/4 in. to 1/4 thinner than No. 30, 5c. per B. advance. Metal, 1/4 in. in width and less, 10c. per Ib. advance	Tarred Shaking White Coinar Cuttings, all paper. " muslin lined"	7 @ 5 @ 7		No. 19. No. 20.	
er and Cheese	Market Metal. Wire.	Soft "No.1	6 % @ 6 @		No. 21. No. 22. No. 23.	6 ""
1 Box. Trenton4) to 16) lbs., 16c.: 160 and over 20c	10 " " " " " " " " " " " " " " " " " " "	Mixed Shavings, part white. Imperfections, No. 2, best folded sheets	5 @	1.第5法管理措施等。	No. 25	10
" Wilson's	1.10 1.50	Book Stock, Mixed	24 6 24		No. 26 No. 27	20 "
Sargent's dis 55&10 <	more than a way to be but the	Pure Mantlas. Bogus Mantlas and Hardwares	1 6 15		No. 28	L FREEZERS.
Racking and Hulan die 98 d		Commons Binders' Board Cuttings Straw Roard Cuttings Wooden Tailor Clips			No. 29	FREEZERS.
Buffalodís 25 %	n. Market Metal. German Silver Turnings, Filings and	Old Metal.	11/4 @			39 quart.
Simpson's Adjustable	Chips, half the price of Scrap.  BRASS AND COPPER WIRE.	CopperYellow metalBrass	14 @			FREEZERS.
Stea n's per doz \$20 00 dis 10 %   Hopkins' per doz \$17 50 dis 10 %   heel Barrows .	Nos. 0 to 20	Heavy CompositionOld lead, soild Tea lead.	6 @ 61/4	SOLE MANU	FACTURERS.	Two 20 quarts
Cardon and Stone (Progley & Chanman) die de et	Vos. 24 and 25	Zinc Pewter, No. 1	S	IDNEY SHEPARD	& CO., Buff	alo, N. Y.
and Copper List of Oct. 27, 1875, net	Fancy Wire not less than 4 cents ner pound advance V	Snelter Wrought fron	.per ton \$30.00			
19 @ 26 dia 50 @ 55 ¶	FINE WIRE, BY THE OLD ENGLISH FINE WIRE GARGE	Machinery fron Light Iron Stove plate	.per ton \$15.50 .per ton \$16.00 .per ton \$13.00	B. WALBR	INCE	<i>ହ,</i> ቦበ
ered	High Briss. Low Brass. Cop'r.	Burnt Iron	.per ton \$11.00	D. WALDN	IDAE	w UU.,
CO	10. 27	Paints, Oils, etc	3.			,
auteca Tolomona Nos Sand 0	To. 30	Paints. Biack lamp—Coach Painters Ordinary	# 1 20c	99 Chambers St	reet, New Yor	· K.
anized Telegraph, Nos. 10 and .i.	10. 32. 0.60 0.64 0.81 10. 34. 0.64 0.68 0.91	" Ordinary " Ivory Drop, fair  Black Paint in oil		Having taken	the Agency of	
Grape, 10 to 14	[o. 35.	Blue, Prussian, fair to best in oil	35 @ 65e	GENEVA T	001 0	0'S
	Ten cents per pound extra for Spooling.	Ultamarine	25 @ 30c	alite VA	OOL C	0.0
Diagonal dia 90 d	lain to No. 20 inclusive, above % in. to 1½ in \$ '44   '' 114 to 3 in. inclusive	Carmine, 40	15 @ 230 FOI	ks, Hoes, Ra	kes Sna	aths &c
	" above 8 in 50   G	" Paris	Sile heat die		*	
	Os. 21, 22, 23, two cents advance on List for each	" in oil	OUC STATE			
and Hardware Co. dis 40 % say's Patent. dis 25 % Determined to 10	"above Sin.  50 05.21, 22, 23, two cents advance on List for each Number.  05.24, 25, 26, four cents advance on List for each Number.  Number.  My Number.	diperal Paints	140	AND	OF	1.91
ond Hardware Co. dis 40 % ay's Patent dis 25 %	" above Sin. " 50 Good Sin. " 50 Good Sin. Sin. Sin. Sin. Sin. Sin. Sin. Sin.	dineral Paints Drauge Mineral. led Lead, American. "English. "Venetian (N. C.) dry. "In oil asset deans.				00/6
ond Hardware Co. die 49 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	" above Sin.  " above Sin.  " boy. 21, 22, 23, two cents advance on List for each Number.  " boy. 32, 25, 26, four cents advance on List for each Number.  " boye No. 26, special rates.  " bill "	diperal Paints.  Prange Mineral  Prange Mineral  Red Less A puerican  " Venetian (C.C.) dry.  " In Oil asst'd cans,  toos Pink		c. E. JENNII		co.'s
ond Hardware Co	"above 3 in	dineral Paints.  Drange Mineral  Ed Lead, American.  Wenetian (N.C.) dry.  indian dry.  tose Pink  denna American, Kaw  """  """  """  """  """  """  """	14c 10% @ 11c 25c 11c; kegs, 85c 10c 18c 18c 4c 4c 16 26c			co.'s
ond Hardware Co.    10	"above 31n. 22, 23, two cents advance on List for each Number. 30, 32, 25, 28, four cents advance on List for each Number. 36, special rates. 1 an 3, inch. 50	dineral Paints  Transe Minister  led Less I, American  Led Less I, English  "Venetian (N.C.) dry  in Indian, dry  cose Pink  lenna American, Kaw  "amplin bil.  "Raw  "Bawta	14c 10% @ 11c 24c 11c; kegs, 83c 10c; kegs, 83c 10c 15c 4c 15c 15c 25c 15 @ 25c	C. E. JENNII	NGS &	co.'s
ond Hardware Co.  ay's Patent.  Best St. St. St. St. St. St. St. St. St. St	"above 31n.  10s. 21, 22, 23, two cents advance on List for each Number.  10s. 24, 25, 26, four cents advance on List for each Number.  10s. 24, 25, 26, four cents advance on List for each Number.  10s. 24, 25, 26, four cents advance on List for each Number.  10s. 25, 26, 26, 26, 26, 26, 26, 26, 26, 26, 26	diperal Painton pronge Mineral Red Lead, American English Venetian (N. C.) dry set d cans, to di set d'anni	14c   14c   19kc   19kc   11c   24c   11c   24c   11c   24c   11c   12c   11c   12c   13c   13		NGS &	co.'s
100   100	"above 3 in.  obs. 21, 22, 23, two cents advance on List for each Number.  obs. 34, 25, 26, four cents advance on List for each Number.  bove No. 26, special rates.  150, 151, 152, 153, 154, 154, 155, 155, 155, 155, 155, 155	dineral Paints.  dineral Paints.  led Leed Leed Leed Leed Leed Leed Leed L	14c	C. E. JENNII	NGS &	co.'s
Description	"above 3 in.  obs. 21, 22, 23, two cents advance on List for each Number.  obs. 34, 25, 26, four cents advance on List for each Number.  bove No. 26, special rates.  150, 151, 152, 153, 154, 154, 155, 155, 155, 155, 155, 155	dineral Paints.  dineral Paints.  led Leed Leed Leed Leed Leed Leed Leed L	14c	C. E. JENNII	NGS &	
Pattern (Wrought)	"above 3 in.  obs. 21, 22, 23, two cents advance on List for each Number.  obs. 34, 25, 26, four cents advance on List for each Number.  bove No. 26, special rates.  150, 151, 152, 153, 154, 154, 155, 155, 155, 155, 155, 155	dineral Paints.  dineral Paints.  led Leed Leed Leed Leed Leed Leed Leed L	14c	C. E. JENNII	NGS &	
Apart   Apar	"above 31n.  "boundaries of the second of th	diperal Paint of the property	14c 105 @ 11c 11c kegs, 83c 11c kegs, 81c	C. E. JENNII	NGS &	ocops,

### Steel.

THREE.
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CLASSES 1, 21, 22,
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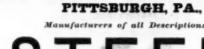
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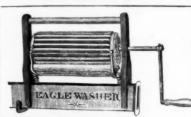
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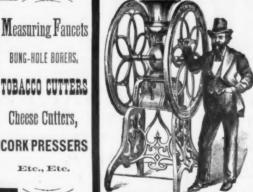
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	BUFFALO.	Carriage and Tire Boits delivered on cars or boats in Pittsburgu.
	Reported by Mesors Stances Chamber to	Machine and Square Head Bolts
i	Reported by Mesers. Sidney Shepard & Co.  Augers—Snell Mfg. Co	Bolt Ends
3	Bits, Auger—Snell Mfg. Co	Bolt Ends 40 % off net Pat. Hot Pressed Square and Hexagou Nuts, small sizes, from 3-16 to % in
5	Bells, Cow—Yaws Genuine	Pat. Hot Pressed Square and Hexagon Nuts. large sizes, from 7-16 to 2 in
6	Brads, Cutdis 50& 10 % Boards—Stove. Brooks' Pat.dis 35 % 4 mos.: 3&5 % 30 dvs	Washers, all made from new band from
5	Leather, new list, oak tanned	Nuts and Washers in 25 lb. boxes, 1/40 P B ex. Nuts and Washers in lots less than one keg each size, 1/40 P B ex.
	Can Openers—Sprague's	Nuts and Washers in 5 lb, boxes, 1c. W B ex, net prices. Standard Caps, for Plows
	Chalk—White, Carpenter 8	200 lb. boxes, 1 in. diam. 3%c * net; %, % in. diam.
6	Augers—Snell Mfg. Co.   Gis 25 x	Nuts and Washers in 5 lb. boxes, lc. # b ex. net p-ices. Standard Caps, for 10ws
6	Silck's Carpenters'	70 W B net; 9-16 in. diam. 60 W B net; % in. diam. 70 W B net. 10 W B extra when less than 1 keg of
200	Cutters—Meat, "Hales"	each size is ordered. Strap & T Hunges33/&10 % off net, derivery as custo'ry Serew Hitching Kings
1	Elbows—Corrugated	Bridge and Boof Bolts— \$ 25 \$ 100 net 1 to 2 in. diam. over 8 ft. long.
6	Files—Maischoss Bros	1 to 2 in. diam. from 4 to 8 ft. long
d	Freezers Ice Cream— Champion # doz. \$15.00 Hammers—Henry W. Kip's	%, % and % in. diam. from 1% to 4 ft. long 5 c net Bridge bolts w.th unset ends
1	Hinges - Window Bling - dis 30&10 5	Bridge and Hoof Bolts—  1 to 2 in. diam. over \$ft. long
6	Hods. Coal—Plain, Black and Galvan'dnew list dis 10 % Funnel, Black and Galvanizad	Duck Nest Tuyere Irons
C	Fancy and Helmet	Wagon Box Strap Bolts— 10 in. long by 7-16 at Screw End, P set of 8 bolts 45c 12 45 45 45 45 45 45 45 45 45 45 45 45 45
d	Kettles—Brass. 356c. Copper, "Hand Made". \$ 5c. 63.41c.	12 ** 9-16 ** ** 8 * 55c 10 ** 9-16 ** ** 8 * 65c 12 ** 9-16 ** ** 8 * 70c 14 ** 9-16 ** ** 8 * 80c
6	Rnives, Drawing—Oval No. 1	14 ** 9-16 ** 8 ** 80c
E E	Lanterns "PeerlessNo. 1 5 10 50 810 50	12 ** 96 ** 10 ** 8 ** 80c 16 ** 96 ** 10 ** 8 ** 90c
	Tuoular. \$11.00	18 · 26 · 1100 20 · 26 · 1200
5	Machines—Boring, Snell's	5c # set for each additional inch over 14 in All lengths made. In ordering Box Strap Bolts please give diameter at
0	Box Union and Eagle	In ordering Box Strap Bolts please give diameter at Screw End. Wagon Box Rods, narrow track, each
2	Molasses Gates—"Self Measuring"	Single Tree Irons, P set of four pieces. Suc
200	Cut, "Chesapeske," 10d	wrought from Boister Plates, 2% in. wide, # set45c
*	" Pointed & Polished 25 24 25 22c	In ordering Box Strap Bolts please give diameter at Screw End. Wagon Box Rods, narrow track, each. Lice Wagon Box Rods, narrow track, each. Lice Wingle Tree Irons, P set of four pleces. Sac Wrought Iron Boltst Plates, 28 In. wide, P set. 45c  """ Str. ""
K	" Clinton	Wrought Hammer Straps, heavy pattern, each
8	Packing—Rubber	" Rub Irons, each
6	Pans—Dripping. # B 5%C Rivets—Iron. Black and Tinned dis 50 s	Double and Single Tree Clips, figure 1, each
0	Screws—"American Screw Co" Flat Head, Iron	Axle Clips, Round Part %, Flat Part 1%, each
8	Sieves-Wood, Hoop arendis 40 % Tinned	Pole Caps, each
d	Skutes and Straps—White's	Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain
d	Plated Rogers' A No. 1	Pole Caps, in lots of 50 sets dis 15 5 Wagon Box Staples, 18 to 28 in, to clinch 3 1000 21 0 2 2 2
X X	G. S. Hall, Elton & Co	Necz Yoke Eyes, each
7 X X	Scales—Buffalo Scale Works	with % rings, each
	Stove Polish -Gelli B gross #4.50	Wagon Rivets, ex. large flat, oval and steeple
-	Tacks—Half Weight Am. Iron	Wagon Rivets, ex. large, flat, oval and steeple head, if in. diam 54c net Wagon Rivets, ex. large, flat, oval and steeple head, if in. diam. all lengths 54c net Wagon Rivets, 3-16 in, diam. all lengths 94c net
	"Dixon's	Ring Botts, %, 1, %, and 1\s 10. (1att). # b 4\screen two controls of the Wagon Rivets, ex. larger, flat, ovai and steeple head, \s 1n. (diam. all lengths. \$\frac{1}{2}\$ \sqrt{c} net Wagon Rivets, 3-16 in, (diam. all lengths. \$\frac{1}{2}\$ \sqrt{c} to 1 inch long. \$\pi\$ b 1c extra \$\frac{1}{2}\$ \sqrt{c} \sqrt{c} \text{liab} \text{b} baper boxes. \$\pi\$ in extra \$\frac{1}{2}\$ in the state of th
***	Tacks-Half Weight Am Iron   dis 55&10 5	King Botts, %, 1, %, and 1\s 10, d1am. # b 4\sc net Wagon Rivets, ex. large, flat, to via and steeple head, \s 1n. diam, all lengths. # 9\sc net Wagon Livets to Indiam. all lengths. # 9\sc net Wagon Livets to Indiam. all lengths. # 10\sc net  Wagon Livets to Indiam. # 1 lengths. # 10\sc net  Wagon and Hunge Nails, \s 1n. # b 17\sc net  Wagon and Hunge Nails, \s 1n. # b 17\sc net
***	Hammers—Henry W. Kip's	Ring Botts, %, 1, %, and 1\s 10. (11at). # b 4\sc net Wagon Rivets, ex. large, flat, oval and steeple head, \( \sc \) in. dian, all lengths. # \$\s\ \sc \) in. dian, all lengths. # \$\s\ \sc \) in the wagon live steep the state of the long. # \$\s\ \sc \) in the long. # \$\s\ \sc \) in the long. # \$\s\ \sc \) extra \$\s\ \sc \) Nolls, in 5 b baper boxe. # \$\s\ \sc \) extra \$\s\ \sc \) wagon and Hinge Nails, \( \s\ \) in. # \$\s\ \) if in. # \$\s\ \) in \$\s\ \) in the wagon Rivets and Nails, in less lots than one keg each size. # \$\s\ \sc \) extra
02 02 EEE	Dixon's   Stock   St	Ming Bolts, %, 1, %, and 1\s in. diati.
0 × 0 × 0 × 0	Dixon's   Sixon's   Sixo	Ming Bolts, %, 1, %, and 1\s 10. d1att.
N N N N N N N N N N N N N N N N N N N	Dixon's   Color   Co	Atle Clips, Round Part %, Flat Part 1½, each. 8c Wagon Clevis, including Pin, complete, each. 10c Pole Caps, each. 10c Pole Caps, each. 10c Strap Botts, Rod, Single Tree Irons, Boister Plates, Botts, Rod, Single Tree Irons, Boister Plates, Including Pin, Complete, each 10c Strap Botts, Rod, Single Tree Irons, Boister Plates, Including Pin, Complete, Single Tree Hooks, and Pole Caps, in lots of 50 sets. Single Tree Hooks, and Pole Caps, in lots of 50 sets. Single Tree Hooks, and Pole Caps, in lots of 50 sets. Single Tree Hooks, and Pole Caps, in lots of 50 sets. Single Tree Hooks, and Pole Caps, in lots of 50 sets. Single Tree Hooks, and Pole Caps, in lots of 50 sets. Single Tree Hooks, and Wagon Rivets, Sile In, dilate, at 1 caps, and 1 sile, and 1 sil
200 to 20 to 200	Cast Iron Hollow	Ring Botts, %, 1, %, and 1\s 10, diam. \$\psi\$ b 4\screte Magon Rivets, ex. larger, flat, to vai and steeple head, \( \frac{1}{2} \) in. diam. all lengths. \$\psi\$ \$\frac{1}{2}\screte \text{c net}\$ Wagon Rivets, 3\text{if in, diam. all lengths.} \$\psi\$ \$\psi\$ \$\psi\$ to 1 lnch long. \$\psi\$ b 1\text{c extra}\$ \$\psi\$ to 1 lnch long. \$\psi\$ b 1\text{c extra}\$ \$\psi\$ to 1 lnch long. \$\psi\$ loss baper boxes. \$\psi\$ le extra \$\psi\$ c 2\text{kin}\$ b 2\text{baper boxes.} \$\psi\$ le extra \$\psi\$ c 2\text{kin}\$ b 1\text{c extra}\$ \$\psi\$ c 2\text{kin}\$ c 2\text{kin}\$ b 1\text{c extra}\$ \$\psi\$ c 2\text{kin}\$ c 2\te
KK KO KO KO2310	Cast fron Hollow         dis 45 %           Wire—Bessemer Steel         dis 94 %           Tin Piaces.—Add for each X.         dis 97 %           Dix14, Ic. Charcoal         89 60   14x20 cc. terne         89 50   22x12           125x17.         8 50   20x28 X.         23 00           14x20.         10 00   20x28 X. <th>Coupling 5c rates. 5c net Tongue 85c net Tongue 85c net Neck Yoke Plates. 10% onet Tongue Cap Iron, 1%, 2 &amp; 2% in. wide, same price \$\pi\$ as Band Iron. Wagon Chains. Stay, Lock and Tongue, 5-16 in. \$\pi\$ 10% enet. \$\pi\$ in. 11%c. net Above price: are free on board cars in Pittsburgh. Subject to change of market, without notice.</th>	Coupling 5c rates. 5c net Tongue 85c net Tongue 85c net Neck Yoke Plates. 10% onet Tongue Cap Iron, 1%, 2 & 2% in. wide, same price \$\pi\$ as Band Iron. Wagon Chains. Stay, Lock and Tongue, 5-16 in. \$\pi\$ 10% enet. \$\pi\$ in. 11%c. net Above price: are free on board cars in Pittsburgh. Subject to change of market, without notice.
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*** ** ** ** ** ** ** ** ** ** ** ** **	Cast Iron Hollow	Coupling "5c net 5c net 7 ongue 8 %c net 7 ongue 8 %c net 8 %c net 8 %c net 7 ongue 6 net 10 %c net 10 %c net 10 %c net 10 %c net 8 mad Frongue 6 %c net 8 %
KEE EO CO 000001008 KEEK	Cast Iron Hollow	Coupling "5c net 5c net 7 ongue 8 %c net 7 ongue 8 %c net 8 %c net 8 %c net 7 ongue 6 net 10 %c net 10 %c net 10 %c net 10 %c net 8 mad Frongue 6 %c net 8 %
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-	HE IRON AGE	4
	One Piece Cerrugated Elbows	
	The following are the Card rates of Lewis, Oliver & Phillips, H. B. Newhail, Il Warren St., New York, Agent. Iron, standard list sasorted sizes, for large orders, specifications to include Bands, small Rounds and Ovals, "Sc. rate, 2 % off net. Flat Rail (1/4×¼), punched and coun'sunk. 4'1c \( \psi \) b net Norway Nail Rods	
EO LEE EE EE	Carriage and Tire Bolis. Discount of Santage and Tire Bolis. Discount of Santage and Tire Bolis delivered on cars or boats in Pittsburgh. 20 5 off net Carriage and Tire Bolis delivered on cars or boats in Pittsburgh. 20 5 off net Machine and Square Head Bolis. 40 5 off net Machine and Lag Screws. 40 5 off net Bolt Ends. 40 5 off net Washers, all made from new band iron. Small sizes, from 3-16 to \$4 10. 50 5 0 5 0 ff net Sunday Bolt Ends. 40 5 off net Washers, all made from new band iron. Small sizes, from 3-16 to \$4 10. 5 0 5 0 ff net Nuts and Washers in \$2 10, boxes, \$4 0 0 0 ft net Nuts and Washers in \$2 10, boxes, \$4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
55% 4 0 0 5 2 5 5 6 5 7 10 0 7 5 7 10 5 5	Stundard Caps, for Plows.  Stundard Caps, for Plows.  Find Harrow Teeth. In lots of 1 ton or more, packed in more partial and the state of the state	
SCHRRRN W	Wrought fron plates, punched \$4\c \text{P} \text{ not } \cdot \text{Fon } \text{ Makers.} \tag{4\c \text{P} \text{ not } \text{ Not } \text{ 3\c \text{ not } \text{ not } \text{ Nost } \text{ Tuyere frons.} \text{ \$14 \text{ 50 } \text{ P doz not } \text{ Nost } \text{ Tuyere frons.} \text{ \$14 \text{ 50 } \text{ P doz not } \text{ 10 ln. long by 7-16 at Serew End, } \text{ set of 8 bolts.} \text{ 4\text{ 50c}} \text{ \$12 \text{ 20 }  20	
CHARL SHOES	14 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
25 5 5 5 5 5 TO LC	In ordering Box Strap Bolts please give diameter at Screw End. Wagon Box Rods, narrow track, each. 15cm "Single Tree I rous # set of four pieces. 3cc Wrought I ron Bolster Plates, 23 in. wide, # set. 45cm "Single Tree I rous # set of four pieces. 3cc Wrought I ron Bolster Plates, 23 in. wide, # set. 45cm "Single Tree I rous # set of four pieces. 3cc "Single Tree I rous # set of four piec	
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STORES SERVE	Wrought Hammer Straps, heavy pattern, each	
THURST'S A SEC	head % in. diam. all lengths "Sign net Wagon Itivets, 3-16 in. diam. a."! lengths "Sign net % to 1 inch long # B 1c extra % Nalls, in 5 B baner boxes "I cextra " in 25 B wood " 'sc extra Wagon and Hinge Nalls, 's fin # B 17 c net wagon Rivets and Nalls, in less lots than ofic keg each size "Sc extra Double Tree Flates "Sc extra	
% % % 600 100 100 ic	Double Tree Plates. "Se net Coupling " be net Coupling " be net Tongue " Bige net Tongue " Bige net Tongue Cap Iron, 1½, 2 & 2½ in. wide, same price # b as Band Iron. Wagon Chains, Stay, Lock and Tongue, 5-16 in, # 10 10 10 10 10 10 10 10 10 10 10 10 10	

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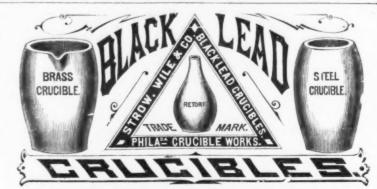
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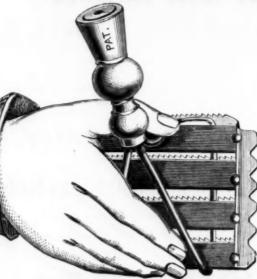
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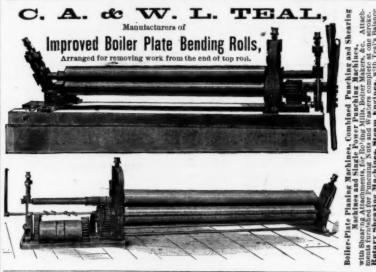
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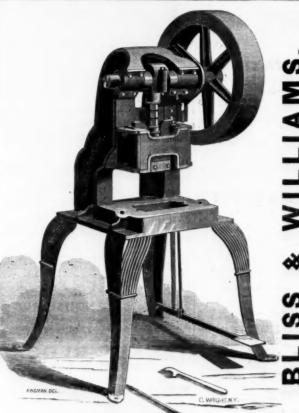
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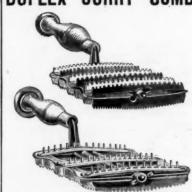


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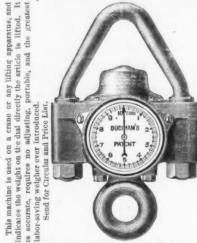
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IronBest Refined Bar Iron	851
"Burden Best" " "	85
Swedish Bar Irongold "	110
Norway Shapesgold "	122
Norway Nail Rodsgold "	130
Sheet Iron, American * b	43
" Galvanized"	39
" Russiangold "	189
Plate Iron, C. No. 1 "	28 %
Iron Rails p ton	847
Steel Rails	72
Pig Iron, Found, y, No. 1 extra "	25
" No. 2 extra "	23
Gray Forge	21
" Scotch " 30 00	
Wrought Scrap Iron 16	81
Old Rails "	28
Steel F b : German F b	9
Eng. Tool, gold 154c Spring	73
American Tool 14%c   Tire	- 6
American Too: 14 c   Tire	45
Bessemer 61/20   Toe Calk	7
Tin Plates # DOX gold   Copper	95
1. C. Char. 10x14\$7.75   Ingot	235
I. C. Coze 10x147(0) Bolt	2
Char. Boof. IC. 14x20, 7 25 Sheathing	3
Coke ". IC, 14v20, 6 25   Lead	39
METALS, Pig.	73
Pig Tin W D., gold   Sneet & Pipe	8 1-10
Banca 21c Zinc Sheet W B	10%
Straits, 194c   Spelter #	
English 1934c   Antimony, gold #	m 183
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"Bradford & Sharp's" Oak-Tanned Leather dis 312 Ronts-Metallic, Sectional, Bond's Patentdis 103
Holts.—Arms, Bell & Co.'s Carriage & Tired's 70& 10 g Arms, Bell & Co.'s Machine
Butts.—Western Butt Co.'s new list— Narrow Fast John
" Loose "dis 45&10 %
Japanned and Silver Tippeddis 45&10 \$
Chuens, Julian, No. 2, \$700; No. 3, \$750; No. 4, \$850. dis 20 \$
Cider Mills. American Senior, \$40.00; Am. Junior, \$25.00, dis 20 \$
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Corn Shellers.—Sandwich Mfg. Co.'s— Power Shellers
Hand ShellersSpecial rates Cotton Gins.—The Carver, 10 in. Saw, \$4 a Sawdis 15 %
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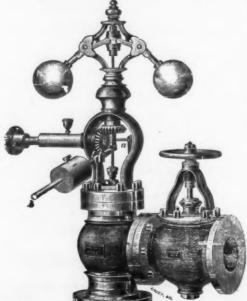
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150.00 165.00 8.00 68.0	X X X X X X X X X X X X X X X X X X X	19 00 21 00 25 00 29 00 35 00 42 00 45 00 49 03 55 00 64 00 74 00 94 00 112 00	21 '00 24 '00 28 '00 33 '00 40 '00 48 '00 51 '00 63 '00 73 '00 84 '00 97 '00 106 '00 125 '00	1 '90 2 · 0 ) 2 · 25 2 · 50 2 · 75 3 · 25 3 · 50 3 · 75 4 · 25 4 · 50 5 · (0) 5 · 60 6 · 50	5:00 6:00 8:00 10:80 14:00 15:00 17:00 20:00 25:00 30:00 42:00 48:00 54:00
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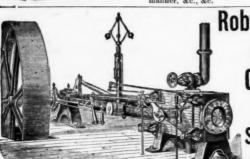
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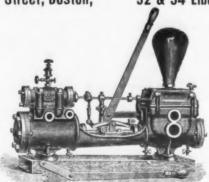
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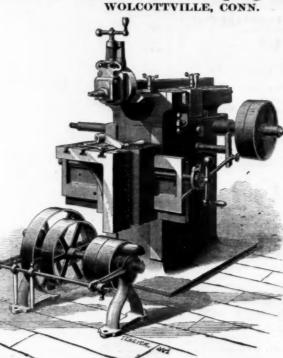
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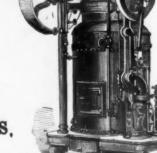
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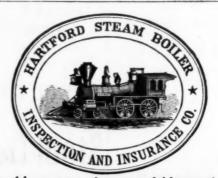
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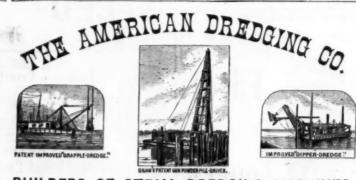
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REPORT OF JUDGES

In Department, V, Group 3, at the 44th Exhibition of the

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No. 318, Drawing, Drop &

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Of Middletown, Conn.

The machinery exhibited by these makers is of a character that calls for special commendation. In addition to their well known punching presses, to which a new feature has been added in a press adjustable to an inclination for discharging work left above the die, there are exhibited by them a combined punch and shears, a drawing or blanking press, and a drop.

bined punch and shears, a drawing or blanking press, and a drop.

In all these there is shown the highest mechanical culture, applied to meet every practical requirement, to avoid every practical difficulty, and to enlarge the range of application of the machines, by devices which are at once simple, elegant, and effective.

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Silver Medal Awarded.

A true copy from the Report on file.

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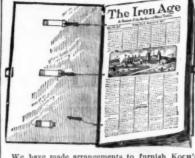
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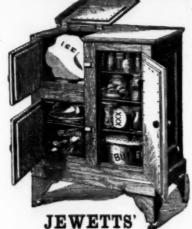
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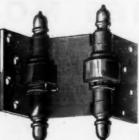
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